THREE ESSAYS ON INTERCOLLEGIATE ATHLETICS AND THE FINANCIAL RELATIONSHIP WITH INSTITUTIONS OF HIGHER EDUCATION

BY

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DISSERTATION

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ABSTRACT

This study includes three essays that seek to better understand the relationship between intercollegiate athletics activities and higher education institutions. The first essay is a review of the literature, which provides evidence of a strong relationship, specifically a financial relationship, between athletics and higher education. The next two essays conduct empirical studies to test aspects of this relationship. In Essay 2, panel regressions and an instrumental variables approach are used with data from the USA Today athletics finance database to analyze the effects of winning on institutional subsidies to athletics. Basketball wins are found to have a positive effect on the amount of subsidy that an institution provides to intercollegiate athletics. However, no evidence of a similar effect of football wins is found. A possible explanation for this difference is the timing of the respective season in the typical university budget cycle. Essay 3 uses a regression discontinuity approach with data from the Department of Education's Equity in Athletics database to test the effects of making the men's NCAA basketball tournament on athletic and institutional revenues. The findings suggest that making the tournament increases basketball-specific and total athletics revenues, but has no effect on institutional revenues. Although athletics success has been found to be associated with positive outcomes in other literature (e.g., higher applications), these essays provide evidence that any revenue increases related to success are isolated to the athletic department and are not realized by the institution. In fact, institutions appear to respond to athletics success by increasing the subsidies that they provide to athletics. Taken together, these essays provide insight into the relationship between athletics activities and the higher education institutions that choose to sponsor these activities.

Keywords: intercollegiate athletics finance, subsidies, regression discontinuity, instrumental variables

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ESSAY 1

ATHLETICS AND HIGHER EDUCATION IN THE LITERATURE

There is a substantial amount of research on athletics in higher education. Specific research topics range from the academic effects of athletic participation on student-athletes to the financial effects of winning teams on donor contributions to an institution. The challenge lies in synthesizing these disparate lines of research to provide a comprehensive understanding of intercollegiate athletics' current role in higher education. The purpose of this literature review is to address this challenge by exploring what the current literature finds about the relationship between intercollegiate athletics activities and higher education. To be sure, there are gaps in the current literature that further complicate the understanding of this relationship; and some of these gaps will be discussed in this literature review. The review includes a historical perspective of athletics in higher education and a review of the pertinent contemporary literature that examines the effects of athletics on institutions, student-athletes, and other stakeholders.

Historical Perspective

A basic background on the origins of athletics in higher education may provide some useful context in understanding their current state. The origins of athletics in higher education could be traced back to intramural activities in early colleges and universities, but organized intercollegiate athletics became popular in the late nineteenth century. College football was already well established by the start of the twentieth century. The first intercollegiate football game was played in 1869 between Princeton and Rutgers. However, this game resembled soccer more than modern football, so historians commonly point to the 1875 game between Harvard and Yale as the first college game with rules resembling modern football (Westby & Sack, 1976).

Savage, Bentley, McGovern, & Smiley (1929) argue that the development of college sports was a result of the transformation of higher education in general during the late nineteenth century and early twentieth century. They note that American institutions during this time were aspiring to become universities, shifting their focus away from undergraduate teaching to graduate programs and research. Although Savage et al. (1929) do not reference Eliot's elective system at Harvard, where the prescribed classical curriculum was replaced with a broadly elective course of study (Rudolph, 1962), they suggest that the increased opportunities for students to pursue programs of study based on market factors had an impact on the development of athletics. Furthermore, higher education was growing rapidly during the early twentieth century; enrollments grew 400% during the first three decades of the twentieth century (Levine, 1986, p. 68). In addition to the significant growth, higher education was also broadening its scope. The research function was becoming a primary mission of higher education (Geiger, 1986). While higher education was experiencing this dynamic growth and change, college athletics also began to flourish.

There were undoubtedly a number of individuals who influenced the direction of intercollegiate athletics during its infancy and helped shape its place within higher education. Westby and Sack (1976) claim that Yale and its popular football coach, Walter Camp, played a key role in the evolution of athletics. Under Camp, Yale's football program became the first to centralize decision-making responsibility to a single person – the head coach; introduce specialization, especially for coaches; and adopt continuous performance analysis methods (Westby & Sack, 1976). These were important innovations. In the late nineteenth century, coaching was far from specialized, with faculty, graduates, or even undergraduates filling the role (Savage et al., 1929, p. 21). Yale was considered the preeminent athletic program in the

early twentieth century. "It was the best-known and most popular embodiment of college life because 'Yale's Democracy' was depicted by journalists as a distinctive education philosophy, a 'dynamo' of undergraduate activity that emphasized the harnessing of individual ambition to group accomplishment" (Thelin, 1994, p. 17).

Yale's Camp was also instrumental in the development and formalization of the rules of the game of football. Yale and Camp's innovations were not enthusiastically received at all institutions. Some, like Charles Eliot at Harvard, thought athletics should be pursued for fun and recreation, not mass entertainment and commercial benefits. However, "by the early twentieth century, most schools and universities, including Harvard, had abandoned attempts to preserve amateur sport" (Westby & Sack, 1976, p. 645). The mixed opinions on the appropriate role of athletics led to strong debate in the late nineteenth century. While most, even Eliot at Harvard, recognized the benefits of athletics, there were frequent objections to a perceived over-extravagance in college sports. Even the more ardent supporters of athletics, like Camp at Yale, supported moderation in some areas, including press reporting (Savage et al., 1929, pp. 24-25).

Football revenues at Harvard and Yale show the significant growth that the sport experienced in the late nineteenth century and early twentieth century. Yale's football receipts, excluding dues and donations, increased from $860 in 1875-76 to $72,961 in 1909-10, representing a 13% annual increase (Westby & Sacks, 1976, p. 630). In constant 2013 dollars, the increase was from $18,668 to almost $1.8 million.[1] Similarly, Harvard's receipts increased from $706 to $78,584 over the same time period, representing a 14% annual increase (Westby & Sacks, 1976, p. 630). Again in constant 2013 dollars, this increase was from approximately

[1] This time period predates the Bureau of Labor Statistics' Consumer Price Index (CPI), so these conversions also rely on the *Historical Statistics of the United States* (Carter et al., 2006), in addition to CPI data from the Bureau of Labor Statistics.

$15,325 to over $1.9 million. Both of these growth figures greatly outpaced ordinary inflation during the time period.

Intercollegiate athletics continued to grow in the 1920's, and one of the important developments during this decade was the nationalization of football. Regional football rivalries began to develop as teams traveled considerable distances to compete against each other. Specifically, football teams from the Midwest, West, and South fulfilled their desire to challenge the powerful teams from the East (Oriard, 2001, p. 65).

Thelin (1994) states that college sports during the 1920's resembled industrial operations in some respects – like the standardized procedures that Camp enlisted at Yale – but he suggests that a medieval metaphor might be more appropriate. Athletic departments and coaches were "dukes and barons whose territories were only loosely controlled by university boards and presidents" (Thelin, 1994, p. 21). Savage et al. (1929) also describe the apparent disconnect between athletics and the more traditional roles of higher education institutions:

> Their financial and public aspects, the reputation which they confer upon the institution, and a thousand other forces have united to make them not so much activities of undergraduate life as joint cooperative enterprises involving presidents, trustees, faculties, alumni, and townsmen, and the vast publics of the radio and the press; they are undertaken less for the diversion of the schoolboy or the undergraduate than for the amusement of others. (Savage et al., 1929, p. 79)

The issues that arose out of college athletics' growth and change during the early twentieth century ultimately came to a head in a report by the Carnegie Foundation in 1929, titled *American College Athletics.* College athletics was taken on as a research topic sort of reluctantly by the Carnegie Foundation. Pilot studies had been conducted for several years, but

deferred. Walter Camp's death in 1925 may have finally opened the door for reform efforts (Thelin, 1994, p. 22). The investigation was led by Howard Savage, with him and his team conducting more than 100 site visits to assess the state of intercollegiate athletics across the nation. While the detailed report included findings in many specific areas, one of the main arguments was that commercialization was pervasive in college sports, which directly contradicted the coveted ideal of amateurism. In other words, college sports were increasingly being pursued for their commercial/financial benefits rather than for the enjoyment and personal satisfaction of the amateur student-athlete.

American College Athletics, also referred to as the Carnegie Report, was not the first call for reform in college sports, the AAUP had also called for athletics reform in the early twentieth century, but it did change the focus of the debate slightly. In the early twentieth century, reform discussions focused on physical aspects of athletics. One of the most important examples is President Theodore Roosevelt's demand for reducing the number of injuries and deaths in college football that ultimately led to the creation of the National Collegiate Athletic Association (Thelin, 1994, p. 15). *American College Athletics* brought other issues to the forefront, including subsidies being paid to student-athletes and recruiting improprieties. While it wasn't completely novel, it became very popular – and controversial – and its findings became headlines in some of the country's leading newspapers (Thelin, 1994, p. 13).

One piece of evidence that Savage et al. (1929) used to point out the growing commercialization during the 1920's was the construction of new facilities. Many institutions built massive football stadiums during the early twentieth century. The costs were far from insignificant, with some approaching $2 million ($2 million in 1922 was the equivalent of almost $28 million in 2013) in the early 1920's (Savage et al., 1929, p. 92). Stadium building efforts

highlighted the growing importance of boosterism in college athletics during this era, as boosters were often called upon to fund the expensive projects. "Football appealed most strongly to the civic and business boosters, who embraced the local team as a symbol of the city's energy and achievement" (Oriard, 2001, pp. 69-70). Institutions also invested in other sports venues as well. Armories during this time often served as shared facilities for military and athletic purposes. However, at some institutions, including Illinois, military instructors often objected to sharing the facilities and effectively monopolized the armories (Savage et al., 1929, p. 93).

American College Athletics also discussed the recruitment and subsidization of student-athletes during the 1920's. The Carnegie Report used the term subsidy to describe any form of payment to athletes. Today, the term is used to describe institutional contributions to athletic departments; in fact, Essay 2 focuses on these institutional subsidies. Nevertheless, the issues of recruitment and subsidization of student-athletes were identified as major problems that posed risks to student-athletes and threatened the amateur ideal in the Carnegie Report:

> The recruiting of American college athletes, be it active or passive, professional or non-professional, has reached the proportions of nationwide commerce. In spite of the efforts of not a few teachers and principals who have comprehended its dangers, its effect upon the character of the schoolboy has been profoundly deleterious. Its influence upon the nature of American higher education has been no less noxious. The element that demoralizes is the subsidy, the monetary or material advantage that is used to attract the schoolboy athlete. It is seldom lacking in the general process of gathering 'a winning team.' (Savage et al., 1929, p. 240)

It should be noted that providing subsidies to student-athletes was prohibited during the early twentieth century in accordance with the ideal of complete amateurism. It was not until 1946

that the "Sanity Code" was enacted, which allowed institutions to offer need-based financial aid to student-athletes. Due to difficulties enforcing the "Sanity Code," it was quickly abolished, allowing institutions to provide financial aid based solely on athletic ability (Lapchick & Slaughter, 1989, p. 9-10). Savage et al. (1929) referred to the subsidization of athletes as the "deepest shadow that darkens American college and school athletics" (p. 265). However, there were bright spots in the Carnegie Report related to subsidies. Their investigation found no evidence of subsidizing athletes at 28 of the 112 colleges and universities, disproving the belief that competitive athletics was impossible without subsidization (Savage et al., 1929, pp. 241-242).

The Carnegie Report was also critical of the media's contribution to the development and commercialization of college athletics in the early twentieth century. In 1929, one in four readers bought the newspaper primarily for the sports section (Oriard, 2001, p. 25). However, the Carnegie Report was careful not to blame the increased number of sports pages and general coverage as the problem. Newspapers were, after all, only responding to an increased public interest in college sporting events. However, the Carnegie Report was critical of the "sensationalism" of sportswriters that had the effect of exploiting persons and personalities. This sensationalism was in direct conflict with the amateur ideal (Savage et al., 1929).

Not all of the findings of the Carnegie Report were negative or necessarily troublesome. Financial accountability received a clean bill of health in the report. In general, Savage et al. (1929) did not find major problems with the financial bookkeeping of athletic departments, although Thelin (1994) points out that their analysis likely omitted external finances that were outside the institutions' control. Nevertheless, athletic accounts were usually well kept and audited by a reputable external accounting firm (Savage et al., 1929, p. 86).

American College Athletics was highly critical of several aspects of intercollegiate athletics, two of which were the commercialization of sports and the lack of control by university presidents. Fast forward 70 years and the results of the Knight Commission on Intercollegiate Athletics reports were essentially the same. The Knight Commission was initiated in 1989 by the John S. and James L. Knight Foundation to look at, much like the Carnegie Report, the connections between higher education and intercollegiate athletics and to propose a reform agenda. The trustees of the Knight Foundation "were concerned that athletics abuses threatened the very integrity of higher education" (Knight Commission on Intercollegiate Athletics, 1993, p. 2). The outcome of the Commission was the proposal of a "one-plus-three" model for reforms that called for increased presidential control and identified academic integrity, financial integrity, and certification as the three main impact areas (Knight Commission on Intercollegiate Athletics, 1993). While the Knight Commission has issued subsequent reports, it is not clear whether any reforms have been successfully implemented.

Women in College Sports

The evolution of women's college sports is another interesting aspect of intercollegiate athletics history. Women's college sports began to grow in popularity in the late 1960's. In 1967, the Commission on Intercollegiate Athletics for Women (CIAW) was formed to promote women's athletic participation and to organize national championships. The CIAW was replaced by the Association for Intercollegiate Athletics for Women (AIAW) in 1971 (Adams & Soladay, 1972). By this time, of course, the NCAA was well established and had expressed little interest in women's sports. The NCAA, in fact, amended and clarified its bylaws in 1964 to limit participation to males only (Wushanley, 2004).

The AIAW's model was quite different from the NCAA's from the outset. Whereas the NCAA was highly commercialized, the AIAW expressed a commitment to the educational objectives of its member institutions. In its first handbook of policies and procedures, the AIAW invited members "if they subscribe to the belief that the focus of women's intercollegiate athletics should remain on the individual participation in her primary role as a college student" (Adams & Soladay, 1972, p. 6). One of the key differences between the NCAA and the AIAW in the early years was that the AIAW prohibited scholarships based on athletic ability. This policy was consistent with their "educational model." However, the AIAW reversed this policy when threatened by the Kellmeyer, et al. v. NEA, et al. lawsuit (Wushanley, 2004).

The AIAW grew rapidly from 280 two- and four-year colleges and universities in 1971-72 to 970 active member institutions in 1979-80 (AIAW, 1980). Women's college athletics began to receive increased attention as a result of the priority placed on the United States' performance at the Olympics during the Cold War (Wushanley, 2004). In order for the United States to compete for the most number of medals, they needed to perform well in the women's events.

As women's college sports began growing in popularity and the AIAW began experiencing some success, the NCAA took notice. Also contributing to the NCAA's interest in women's intercollegiate athletics was the Title IX legislation of 1972. Title IX was part of the Educational Amendments of 1972 to the Civil Rights Act of 1964. The statute states that, "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance" (Title IX Educational Amendments, 1972). The legislation did not specifically mention intercollegiate athletics, and there was some debate at the time as to whether

it even applied to college sports (Kuhn, 1976). Part of the debate centered on the stipulation in the law about the receipt of federal financial assistance. Since athletic departments did not receive federal assistance directly, some argue for a "program-specific" interpretation of the language which would exclude athletic departments. In fact, this interpretation was supported by the Grove City College v. Bell (1984) court decision. However, others believed in an "institution-specific" interpretation, which would mean that athletic departments were subject to Title IX so long as their host institutions accepted federal financial assistance of any kind, including student financial aid. This interpretation was codified in law as part of the Civil Rights Restoration Act of 1987 and remains the law of the land today (Civil Rights Restoration Act, 1987). As the details of who was subject to Title IX were being worked out over several years, it is not surprising that the implementation was slow and clumsy. The Department of Health, Education, and Welfare (HEW) was assigned enforcement responsibilities for Title IX. HEW originally gave a grace period for compliance, which was eventually extended, minimizing the immediate effects felt by athletic departments (Heckman, 1992).

While Title IX had little immediate impact due to confusion over its implementation, it did force the NCAA to consider how it would comply. When the AIAW resisted overtures to incorporate into the NCAA, the NCAA took matters into its own hands. In 1975, the NCAA announced that it would be offering women's championships. To attract institutions to its championships, the NCAA offered economic incentives for women's programs to join: free membership and free participation in championship events. AIAW programs had to pay dues and pay their own way at championships. They then tied their men's Final Four television contract to the women's basketball championship game, making it a more attractive option than the AIAW championship game (Sperber, 1990). The AIAW could not compete and soon

dissolved. Some would describe the NCAA's actions as predatory toward the AIAW (Sperber, 1990), while others may contribute the AIAW's demise to its own policies that ultimately limited its financial resources (Wushanley, 2004).

Women's college sports have continued to grow in popularity since the 1980s. At the same time, Title IX's application has been clarified through a series of court decisions. In chronicling the major decisions, Heckman (2003) points out that the court has relied on the 1979 Policy Interpretation in deciding cases related to Title IX. The Policy Interpretation outlined three tests for compliance. It stated that institutions will be assessed based on proportionality of students and student-athletes of the same sex, displaying a history and continuing practice of program expansion, and fully accommodating the interests and abilities of the underrepresented gender (Office of Civil Rights, 1979). While Heckman (2003) acknowledges gains in opportunities for female student-athletes under Title IX, she concludes that "the 'glass sneaker' continues to exist for females in athletics and its continued vulnerability has become glaringly evident since entering the new millennium" (p. 615). Perhaps one of the main takeaways from the evolution of women's college sports is the dominant role that the NCAA has taken in intercollegiate athletics.

As intercollegiate athletics have evolved, the NCAA has solidified its role as the primary governing body for college sports. It has grown into what some call an empire (Sperber, 1990), with over 1,000 member or affiliated institutions. Football and basketball, both men's and women's, are considered the revenue generating sports. Because of their financial importance, these sports are the focus of much of the literature. However, nonrevenue sports are also an essential part of intercollegiate athletics. The NCAA mandates that institutions sponsor these sports in order to field revenue generating football and basketball teams. For example, the

NCAA requires programs to field 16 varsity sports in order to be eligible to participate in their highest division, Division I, which is sometimes referred to as big-time college sports (NCAA, 2007). This requirement effectively represents a minimum level of investment in athletics for institutions wishing to participate in Division I. One could argue that these mandated investments come at the expense of investments in other institutional priorities.

This brief history shows that athletics have a long tradition in higher education, but also that the relationship between athletics and higher education has been troubled at times. As early as the Carnegie Report of 1929, observers had recognized a tension between the traditional values and missions of higher education institutions and their approach to intercollegiate athletics. Essentially the same issues addressed in the Carnegie Report were identified by the Knight Commission reports on intercollegiate athletic reform in recent decades. This suggests that athletics have effectively resisted reform while growing in scale and visibility.

Effects of Athletics on Institutions

It seems intuitive to expect intercollegiate athletics to impact the institutions that host them. The following sections explore the financial and non-financial effects of athletics on institutions. The financial effects section specifically looks at athletic subsidies, indirect financial effects, and the tax status of intercollegiate athletics. The non-financial effects section looks at the "advertising effect" as it relates to athletics' impacts on enrollments, and also includes a discussion of critics of intercollegiate athletics.

Financial Effects

Discussion of the financial effects of athletics on institutions may be aided by a basic overview of the major revenue and expenditure streams for athletic departments and some descriptive statistics of the various elements. Fulks (2012) highlights the disparities that exist in

intercollegiate athletics finance, even across the Division I subdivisions. The median generated revenue for NCAA Division I athletic programs that participate in the Football Bowl Subdivision (FBS) was $38.8 million in 2011 and median total expenses were $50.8 million (Fulks, 2012). For Division I programs participating in the Football Championship Subdivision (FCS), the median generated revenue was $3.4 million in 2011, compared to median total expenses of $13.2 million (Fulks, 2012). For Division I programs that do not participate in football, the median generated revenue was $2.2 million in 2011 compared to median total expenses of $11.9 million (Fulks, 2012). The gap between generated revenues and expenses is often filled with what the NCAA refers to as "allocated revenues," which are comprised of student fees, direct institutional aid, indirect institutional support, and direct governmental support (Fulks, 2012). These revenue streams may also be referred to as "athletic subsidies," and will be discussed in detail in the next section.

Athletic subsidies. The brief history of intercollegiate athletics provided earlier showed that athletics have been a fixture in higher education for some time. There is a financial component to this relationship that has begun to receive increased attention and scrutiny in recent years. Perhaps the biggest myth of college sports is that they generate large profits that directly benefit the host colleges and universities financially. The truth is that the flow of financial support typically moves from the university to the athletic department (Kahn, 2007), instead of the other way around. There are several ways in which institutions support athletic programs financially, ranging from direct budget transfers to covering the deficits generated by athletic departments. This support highlights the strong financial relationship between the two.

In big-time college sports, ticket sales and media contracts for football and men's basketball are the primary revenue generators. However, athletic department financial reports

provided to the NCAA also include revenue line items for student fees, direct institutional support, and indirect facilities and administrative support (Fulks, 2012). Direct institutional support and indirect facilities and administrative support are clearly resources that flow from the university to the athletic departments. Student fees are also going to the athletic department instead of the institution to support student programs or academic initiatives.

The existence of deficits in intercollegiate athletics also defies the myth that they are profit machines. Deficits, even at large, Division I programs are not uncommon. While football programs often generate profits, nonrevenue sports and administrative expenses can burn through these profits, leaving the athletic department with an aggregate deficit. In 2003, three Big Ten institutions – Indiana University, Purdue University, and University of Minnesota – reported total expenses that exceeded total revenues (Indianapolis Star, 2005). The average deficit for these three programs was -$535 thousand, while the average profit from their football programs was over $7 million. In other words, the significant profits from the football programs were not sufficient to cover the entire athletic enterprise at these institutions. Athletic department deficits again point to a strong financial relationship since the institutions will effectively be covering the deficits amassed by athletics.

Kahn (2007) looked at aggregate revenue and expense data for athletic programs. He found that Division I-A schools, which would be referred to as FBS schools today, reported an average profit of $2.2 million; Division I-AA, known now as FCS, schools reported an average deficit of -$300 thousand; and Division I-AAA schools also reported an average deficit of -$300 thousand (Kahn, 2007, p. 220). These figures, however, include institutional sources of revenue and do not represent true self-sufficient profit or loss figures. When institutional sources are excluded, all three divisions showed average deficits. Without institutional support, Division I-A

produced a deficit of -$600 thousand; Division I-AA produced a deficit of -$3.7 million; and Division I-AAA produced a deficit of -$3.5 million (Kahn, 2007, p. 220). This phenomenon runs directly counter to the myth that intercollegiate athletic programs generate profits for their host institutions, and is likely what motivated James Duderstadt, former University of Michigan President, to quip that nearly all athletic departments are net financial losers, even though they tout their self-sufficiency (Duderstadt, 2000). In fact, it appears that athletic departments are far from self-sufficient and rely heavily on their strong financial ties to the institutions.

A more recent study by Denhart and Vedder (2010) considerd athletic subsidies in detail. They show the prevalence of subsidies in general, but also examine differences across institutions. Denhart and Vedder consider subsidies a tax on institutional revenues and their study tests the hypothesis that the tax is regressive, disproportionately affecting institutions and students that can least afford to pay. Their findings suggest that certain institutional characteristics are associated with higher levels of subsidies. Specifically, they found that lower enrollments, lower institutional wealth, and higher percentages of Pell-eligible students were associated with higher athletic subsidies (Denhart & Vedder, 2010, p. 14). Denhart and Vedder conclude that these findings support their assertion that athletic subsidies represent a regressive tax on institutions and students. One critique of this study is that it only uses data from FBS institutions, raising questions about the generalizability of these findings to other NCAA divisions. Another critique is that Denhart and Vedder's study is purely descriptive in nature, simply highlighting differences in subsidies across institutions without looking for a causal relationship. They make no attempt to explain why these differences exist or understand the decisions that lead to these differences.

While athletic subsidies suggest that an overall economic benefit does not exist, some studies refute this claim (e.g., Goff, 2000). Goff (2000) questions the legitimacy of the claim that athletics do not provide a direct financial benefit to institutions. He claims that three adjustments need to be made to the finance data when comparing revenues and expenses. Specifically, Goff lists the valuation of grants-in-aid at list price rather than incremental expense, attributing athletic revenues to non-athletic accounts, and attributing athletic expenses to non-athletic accounts as three issues with the finance data that can lead to an inaccurate assessment of athletics' true financial contribution. He suggests that athletics are net financial contributors to institutions when adjustments for these three issues are made. Goff offers very little empirical evidence to support his assertion, but he references a 1992 study of Western Kentucky University's athletic financial statement (Borland, Goff, & Pulsinelli, 1992). Borland et al. (1992) found that, after making the types of accounting adjustments outlined by Goff, the athletics operating loss at Western Kentucky improved from -$1.2 million to -$330 thousand. However, this study considered institutional subsidies as athletic revenues. Even if athletic departments are more profitable after making certain accounting adjustments, the very existence of institutional subsidies undermines Goff's assertion that athletics are a net financial contributor to institutions of higher education.

A strong financial connection exists between intercollegiate athletics and higher education. This relationship generally includes a flow of financial support from higher education institutions to athletic departments, which contradicts the perception that athletic departments are self-sufficient. This financial dependency is not, however, necessarily a problem. Certainly, the existence of deficits in any area of higher education is not ideal, but their existence does not necessarily indicate out of control finances. In the same way, institutional support for athletics,

while defying the myth that athletics are self-supporting, does not necessarily indicate misplaced priorities. These types of judgments require a closer look at the context of intercollegiate athletics in higher education and the utility of their many outcomes, including nonfinancial outcomes. Nonfinancial outcomes may represent benefits to the institution or to student-athletes that justify the subsidies to athletics.

Indirect financial impacts. Goff (2000) highlights the indirect economic benefits to institutions that may result from their athletic programs. Positive effects on donations and state appropriations are two of the indirect economic benefits addressed in the literature.

Baade and Sundberg (1996) found that, although winning percentage did not have a statistically significant relationship with alumni giving, bowl game appearances were positively associated with donations to public and private institutions. Postseason basketball tournament appearances were also positively associated with donations, but only to public institutions. These results suggest that donors are more strongly compelled to contribute by postseason success than regular season success. A postseason appearance "legitimizes a good record, while a good record without a postseason appearance is very disappointing" (Goff, 2000, p. 800).

Other research has attempted to pinpoint exactly what kinds of donations are affected by athletic success. Sigelman and Bookheimer (1983) also found football success to be associated with higher alumni contributions, but only those contributions directed to an institution's athletic department. These contributions are restricted and intended only for the support of athletics programs, as opposed to annual fund contributions that can be used for any purpose. The correlation between football success and donations to the institution's annual fund was actually negative, but not statistically significant. This may suggest that football success encourages alumni to direct their gifts to the athletic department rather than the annual fund. Restricted gifts

could be considered less beneficial to a higher education institution than general, unrestricted donations to the annual fund that can be used for any purpose.

Humphreys and Mondello (2007) further validated the claim that athletic success is related to restricted gifts, rather than unrestricted gifts. They found that for public institutions, appearances in bowl games and the postseason men's basketball tournament had positive and statistically significant relationship with restricted donations, but no significant relationship with unrestricted donations. Bowl game appearances were associated with a 12% increase in restricted donations and postseason basketball appearances were associated with an 8.5% increase. For private institutions, only appearances in the postseason men's basketball tournament had a significant relationship with restricted donations; they were associated with a 9.8% increase in restricted donations. "Because restricted donations include funds earmarked for the athletic department, our [these] results indicate that the academic units at institutions might not benefit from athletics-related increases in donations" (Humphreys & Mondello, 2007, p. 278). Despite the restricted nature of these contributions, they are financial resources flowing into the institution and represent at least a nominal economic benefit.

Grimes and Chressanthis (1994) provide somewhat different evidence regarding the nature of donations. Their single-institution study at Mississippi State University (MSU) also looked at the relationship between athletics and donations, but they were able to distinguish academic contributions from athletic contributions. Ignoring contributions earmarked for athletics, Grimes and Chressanthis found that winning percentage in MSU's three revenue-producing sports of football, men's basketball, and baseball had a positive and statistically significant relationship with academic contributions. Television appearances in baseball also had a significant relationship with contributions. Postseason appearances was not associated with

academic contributions. "The empirical results suggest that the athletic success of a school's overall sports program can positively influence the level of alumni giving to the academic side of the institution. Thus, intercollegiate athletics is found to generate a spillover benefit to the university" (Grimes & Chressanthis, 1994, p. 38). It is also interesting to note that Grimes and Chressanthis identified a negative relationship between NCAA sanctions and academic contributions to MSU.

There may be additional indirect economic benefits to athletics. Humphreys (2006) found that participation in college football corresponded to an increase in state appropriations of 8%. Although this relationship was statistically significant, football success, measured by bowl game appearance and final rankings, did not have a statistically significant relationship with state appropriations. Humphreys (2006) applied Becker's (1983) model of competition for political influence among pressure groups to posit that the positive relationship between big-time college football participation and state appropriations may result from the influence of alumni, fans, and athletic booster groups. Humphreys's study is especially interesting because it identifies a benefit to institutions for simply participating in athletics, whereas most other studies look at the effects of athletics success.

Tax status. The tax status of intercollegiate athletics offers another connection between higher education institutions and their athletic departments. This status has periodically received attention in the media and Congress. The most recent inquiry into the tax exemption for intercollegiate athletics came in 2006 when the chairman of the House Ways and Means Committee requested that the NCAA respond to a list of questions ("Congress' letter," 2006). The NCAA was essentially asked to justify their tax exempt status. No changes were made to the exemption as a result of the inquiry.

Tax experts have examined the intricacies of this exemption and have discussed its origins and merits. Colombo (2010) outlines the pertinent tax code provisions to the NCAA's and intercollegiate athletics' tax exemptions. He points out that charitable and educational institutions are exempted from corporate taxes under section 501(c)(3) of the internal revenue code and that this status requires that organizations pass organizational and operational tests. Among these are the criteria that an organization is primarily charitable in nature, does not result in excessive private benefit, and does not exhibit excessive commercial activity (Colombo, 2010, p. 115).

An important aspect of tax exemption is that it is for an entity, rather than specific activities of an organization. This characteristic has obvious implications for the tax exemption for intercollegiate athletics. Since athletic departments are part of higher education institutions, they derive their tax exemption from these institutions. The tax-exempt status for colleges and universities is rarely questioned. The NCAA's tax exemption is slightly more nuanced. As a separate entity, it must satisfy the criteria for exemption on its own. Critics may argue that the NCAA violates some of the requirements, like the prohibition of excessive commercial activities. For example, the NCAA derives its revenues entirely from commercial activities, 90% of which represent its negotiation of television and marketing rights fees (NCAA, 2010a). To counter such arguments, the NCAA focused on two arguments in its response to the Congressional inquiry in 2006: the NCAA supports the educational mission of the institutions that they represent; and when considering the NCAA's tax-exempt status, you must consider how revenues are spent, rather than the overwhelming size of the revenues generated (NCAA, 2010b).

Colombo's (2010) analysis suggests that tax law is adequately complex enough to make it difficult to clearly distinguish between what is deserving of tax-exemption and what is not. He

also seems to suggest that since the NCAA and intercollegiate athletics in general are currently tax-exempt, their status may be more difficult to revoke. Nevertheless, it seems likely this issue may continue to spark debate and the occasional Congressional inquiry.

Overall, it should be evident that there are direct and indirect financial effects of athletics on institutions that suggest a strong financial connection between the two. This connection is further highlighted by the tax status of intercollegiate athletics. In addition to these financial effects, there are also non-financial effects of athletics on institutions. These non-financial effects are reviewed in the following section.

Non-financial Effects on Institutions

There is a body of literature that looks specifically at non-financial effects of athletics on institutions. Some of this literature explores possible enrollment and academic benefits of athletics, while another piece consists of critics lamenting athletics' place in higher education.

Advertising effect. Several studies have examined the potential for academic benefits to institutions that participate in athletics and are successful. These studies generally test the hypothesis that an "advertising effect" accompanies athletics success. In effect, the theory posits that colleges and universities participating in college sports and fielding successful teams experience positive publicity that translates into more interest and applications from prospective students. This is also sometimes referred to as the "Flutie effect" since the phenomenon was distinctly observed at Boston College after quarterback Doug Flutie's famous touchdown pass in a 1984 game.

Toma and Cross (1998) provide strong evidence of this advertising effect. They analyze the relationship between intercollegiate athletics and the college choice process. They found that winning a national championship in men's basketball or football was associated with increases in

applications to the institutions in subsequent admissions cycles. Football championships seemed to have the more significant impact on applications. These applications gains were both absolute and relative to peer institutions.

Toma and Cross (1998) suggest that the positive attention associated with winning national championships in the two marquee sports drives the bump in applications. To support their theory, they posit that the championship seasons that could reasonably be tied to a compelling story seemed to correspond to the most significant application jumps.

> The 'good story' phenomenon holds among basketball champions. Michigan in 1989 and Georgetown in 1984 – the two schools with the most dramatic increases in applications – both represented good stories. Michigan won with a likable interim coach, Steve Fisher, named the week of the first round tournament games, and Georgetown won 2 years after losing the championship to North Carolina when guard Freddie Brown threw a last-minute pass directly to a UNC player standing behind him, cinching the game for Carolina. (Toma & Cross, 1998, p. 652)

The good story phenomenon seems to hold for non-championship seasons as well, implying that it is not only success, but increased exposure that attracts prospective students. Toma and Cross cite Duke University as an example of this. Before Duke's men's basketball team won back-to-back national championships in 1991 and 1992, it was receiving positive attention in the media for its rise to prominence. This positive attention was associated with applications increases (Toma & Cross, 1998, p. 653).

The basic finding that intercollegiate athletic program success may affect the college choice decisions of prospective students is very interesting. It is perhaps rare for an auxiliary enterprise to have this type of effect on prospective students. Toma and Cross's (1998) study

was conducted using 1972 to 1992 national champions, so the data is somewhat dated now. There have been significant advances in how students gather information about higher education institutions in the years since their sample was taken. A critique of their study might question whether their results would hold today. For example, has the use of the internet to gather information about schools affected the tendency of students' college choice decisions to be affected by athletic success? Perhaps the increased availability of information has even increased the exposure of "good stories," thus increasing the effect on students' college choice decisions.

Other studies have tested the power of the "advertising effect" by looking for evidence that athletics participation and success can actually enhance the student profile. The general idea is that the publicity attracts more applicants from which colleges and universities select better students. These studies are essentially taking Toma and Cross's (1998) study one step further to determine if institutions are able to capitalize on the expanded applicant pool. The standard measure of student quality used in these studies is the SAT scores of incoming freshmen.

McCormick and Tinsley (1987) evaluate this theory. They found evidence that participation in big-time athletics and successful football programs, measured by winning percentage, was positively associated with SAT scores of incoming freshmen. Participating in major college sports was associated with a 3% increase in SAT scores on average across their various model specifications. McCormick and Tinsley believed that their findings provided evidence that sports compliments, rather than degrades, the academic mission of higher education institutions:

> The evidence presented here is consistent with the view that some students get more than one education while enrolled in college; intercollegiate athletic competition is a natural

> consequence and byproduct of undergraduate education. This implies that athletic success can often go hand in hand with academic success, and, insofar as this study goes, critics of athletic success are misguided if their motive is the academic improvement of the university. (McCormick & Tinsley, 1987, p. 1108)

One of the drawbacks of McCormick and Tinsley's (1987) study is the age of the data. Generalizing the results from 1971 data to today may present some issues. However, other studies have resulted in similar findings. Mixon (1995) used 1992 data to conclude that basketball success, as measured by the number of rounds played in the NCAA tournament, was positively associated with SAT scores. This validates McCormick and Tinsley's findings and supports the idea that "athletics may indeed enhance the mission of a university, by attracting quality students to campus" (Mixon, 1995, Conclusions section, para. 1).

This positive relationship between athletics and SAT scores is not, however, consistent throughout the literature. Bremmer and Kesselring (1993) challenge the results of McCormick and Tinsley (1987). Bremmer and Kesselring (1993) used more recent data – 1989 versus 1971 – to test the effect of athletics on SAT scores. Whereas McCormick and Tinsley find that simple participation in big-time athletics and football success, as measured by a 15-year winning percentage, was positively associated with SAT scores, Bremmer and Kesselring found no significant relationship between participation or football success measured by the number of bowl games played and SAT scores. Bremmer and Kesselring also evaluated basketball success, using the number of appearances in the NCAA tournament as the independent variable. They found no relationship between basketball success and freshmen SAT scores, although Mixon (1995) would later challenge these claims while using a slightly different variable (i.e., number

of rounds played in the NCAA tournament). Similarly, Tucker and Amato (1993) could not confirm the significant relationship between athletics and SAT scores.

Tucker (2005) posits that the "advertising effect" may actually change over time. Tucker looked at the relationship between athletics and the SAT scores of incoming freshmen in 1991 and found no significant relationship. However, he also evaluated this relationship after the 1995 changes to the college football bowl system and found that an institution's football success had a positive and statistically significant relationship with SAT scores. Changes to the relationship over time may explain why there are seemingly contradictory results from studies looking at different time periods.

Some evidence suggests that athletics success impacts student outcomes as well, like the retention and graduation rates of the student body. Although these outcomes benefit institutions, they are primarily related to students and will be discussed in subsequent sections.

Critics of Athletics in Higher Education

The literature also includes general critiques of intercollegiate athletics. These pieces are generally not peer-reviewed, but it is important to acknowledge their existence since they may add to the understanding of the current state of intercollegiate athletics. Sperber (2000) fits into this category. The title alone – "Beer and Circus: How Big-time College Sports is Crippling Undergraduate Education" – gives readers a pretty good idea of what Sperber's thoughts are the effects of athletics on higher education. One nuance mentioned in the title that deserves specific mention is the descriptor "big-time" college sports. Sperber's critique is specific to the largest athletic programs, and he gives no indication that he objects to all forms of intercollegiate athletics on college campuses.

Sperber (2000) describes a deterioration of undergraduate education in America's college and universities since 1970 and attempts to tie this decline to the rise of big-time college sports. Sperber also blames alcohol's prominence on college campuses for this decline. These two elements – alcohol and athletics – are the beer and circus referenced in the title. Sperber links these two elements in his description to one of the common explanations for why college and universities participate in athletics. He explains that athletics are often cited as contributing to the quality of student life on college campuses. "'Quality of life' is often a code word for student partying in conjunction with college sports events" (Sperber, 2000, p. 65).

Sperber (2000) talks critically about one of the potential benefits discussed in other literature: the advertising effect. While not denying the existence of an advertising effect of winning athletic teams, Sperber questioned the wisdom in actively pursuing such an effect when there was no guarantee of producing a winning team and there appeared to be a converse effect of losing teams or scandals that could negate any previous applications gains. Sperber was also troubled by survey results showing that more students responded that they were well informed about the athletic programs than those that responded that they were well informed about the undergraduate education programs at the schools to which they applied (p. 62). Overall, Sperber's book highlights his belief that there may be a significant non-financial cost to intercollegiate athletics in their current form, namely the deterioration of undergraduate education.

James Duderstadt, former president of the University of Michigan, may also be considered a critic of intercollegiate athletics in their current form. While his critiques may be less severe than Sperber's (2000), Duderstadt (2000) identifies what he believes is the fundamental problem with intercollegiate athletics:

> The key flaw in intercollegiate athletics as we conduct it today is its independence from and irrelevance to the educational mission and academic values of our universities. Big-time football and basketball are, in reality, commercial entertainment enterprises that have absolutely nothing whatsoever to do with the educational mission of universities. (pp. 265-266)

In addition to commercialization and professionalism, Duderstadt (2000) is also specifically critical of the lack of control of athletics activities by institutions, acknowledging that this is not a new phenomenon (p. 267), which is supported by the Carnegie Report of 1929 (Savage et al., 1929). Related to the inability to control intercollegiate athletics, Duderstadt describes the "financial firewall" that separates athletic and academic budgets (p. 145). He views this as problematic because it places an emphasis on revenue generation rather than cost control, and "perhaps most significantly, it further widens the gap between the athletic department and the rest of the university" (p. 145).

Interestingly, Duderstadt (2000) does not place the blame for the problems found in intercollegiate athletics on athletic directors, coaches, and players. Instead he identifies faculty, governing boards, and presidents as the primary sources of blame (p. xi). While he claims that coaches and athletic directors are simply "responding to their marching orders" and acting on the incentives and opportunities that exist, he is more critical of university presidents as choosing the path of least resistance rather than taking on the difficult challenge of aligning athletic activities with the educational mission (p. 296). Of course, a counter critique to this view is that Duderstadt, himself, was a university president at an institution that participates in big-time college sports, and was evidently unsuccessful in implementing the types of reforms that he proposes in his book.

The various calls for reform, like the Carnegie Report of 1929 and the Knight Commission Reports more recently, are also evidence that there are those that are critical of aspects of intercollegiate athletics (Knight Commission on Intercollegiate Athletics, 1993; Savage et al., 1929). It is worth noting that these critics, including Sperber (2000) and Duderstadt (2000), are not critical of all aspects of athletics, and may even believe that intercollegiate athletics should be a part of higher education, just in a reformed state.

Discussion of Effects on Institutions

The research shows that institutions might benefit economically and academically from their athletics programs. Through increases in private gifts and even state appropriations, athletics may bring financial resources into their host institutions (e.g., Baade and Sundberg, 1996; Grimes and Chressanthis, 1994; Humphrey and Mondello, 2007; Humphreys, 2006). The literature also shows that the popularity of college sports and the publicity that they bring might lead to non-economic benefits for institutions (e.g., Toma and Cross, 1998; McCormick and Tinsley, 1987; Mixon, 1995; Tucker, 2005). Institutions may benefit from increased applications, while also enhancing the student profile by attracting more desirable students.

Although there is not complete consensus throughout the literature reviewed in this section, one of the strengths is the relative consistency of findings. For example, multiple studies finding evidence of a positive relationship between athletics success and applications or financial gifts enhances the confidence in these findings. On the other hand, one of the concerns about this body of literature is its generalizability. Many of the studies focus specifically on the effects of successful athletics programs. In reality, not all athletics programs can be successful. Toma and Cross (1998) provides strong evidence of the advertising effect of successful college sports, but they are narrowly defining success as national championship teams. A related limitation of

this body of literature is the tendency to focus on big-time college sports participants, which are typically defined as NCAA Division I member institutions. The samples in many of the studies reviewed in this section do not include data from NCAA Division II and Division III member institutions. In considering benefits to institutions, like the advertising effect, it is important to note that they may not be consistently observed.

Effects of Intercollegiate Athletics on Student-athletes

Student-athletes are perhaps the primary stakeholder in intercollegiate athletics. It is not surprising that they are also perhaps the most affected by their participation in college sports. The literature suggests that student-athletes also realize economic and social/academic benefits from their ties to athletics.

Economic Effects on Student-athletes

The economic effects of college sports on the student-athlete participants are the topic of some research and much discussion. In fact, the topic is dominated by an ongoing debate. Questions about paying college athletes spark passionate responses on both sides of the issue. Unfortunately, there is very little academic literature on the topic outside of legal analyses (e.g., Goplerud, 1997). Despite the lack of academic literature, a brief description of recent developments in the debate about paying college athletes may provide useful context.

Arguments for paying college athletes have been advanced by coaches, former players, and current players recently and have received much publicity. Steve Spurrier, football coach at the University of South Carolina, proposed to pay a per game stipend to his football players from his salary. His proposal was supported unanimously by his SEC coaching peers, but of course, it cannot be acted on under current NCAA rules (Associated Press, 2012).

The legal case of former UCLA basketball player Ed O'Bannon has received much of the attention in the debate of paying college athletes recently. The class action lawsuit, in which O'Bannon is a named plaintiff, seeks damages for former players from the use of their images and likenesses. The O'Bannon case's initial focus was on the use of players' likenesses in video games; however, a settlement was announced in November, 2013 that included EA Sports and Collegiate Licensing Company (Mandel, 2014; Staples, 2013). The case now is focused on the NCAA and broadcasting rights, which is the bigger piece of the potential judgment, with estimates exceeding $3 billion (Berkowitz, 2013). While individual institutions are not defendants in the case, they nevertheless have a vested interest in its outcome, and the NCAA has utilized supportive letters from nine university presidents in its argument for summary judgment in its favor (Berkowitz, 2013).

In January, 2014, a unionization petition and union cards from an undisclosed number of football players were submitted on behalf of players at Northwestern University in a bid for recognition by the National Labor Relations Board as a group with collective bargaining rights (Farrey, 2014). In addition to compensation consideration, the organization spearheading the effort, the College Athletes Players Association, also seeks to collectively bargain on other reform issues including medical coverage, minimizing the risk of traumatic brain injury, improving graduation rates, and securing due process rights for athletes (College Athletes Players Association, n.d.). Both the NCAA and Northwestern University have asserted that athletes are not employees of the university, and are thus not eligible for collective bargaining.

The issue of paying college athletes appears only to be becoming more complex in recent years, as evidenced by the various strands it has taken: coaches' proposals, legal cases, and unionization bid. While there is little peer reviewed literature on the topic, it is nevertheless

important to the dynamic of intercollegiate athletics. There may be a temptation to classify the debate as an NCAA corporate issue, and not necessarily central to the relationship between intercollegiate athletics and institutions. However, depending on the outcomes of the various negotiations and legal proceedings, the issue of paying athletes has the potential to alter college sports at its core. The fact that university presidents are looking to assert the best interests of their institutions in court documents signifies that they understand that the outcomes could have far reaching effects.

The literature shows that the possible economic effects of athletics on student-athletes extend beyond their college experience. Long and Caudill (1991) found that male athletes earned 4% higher incomes than non-athletes in their early careers. Female athletes did not earn a statistically significant premium. Long and Caudill use human capital theory to suggest that athletic participation may help athletes acquire nonacademic skills and traits that enhance their earning power. Human capital is the skills, abilities, and other attributes that an individual brings to the labor market and human capital theory posits that employers will seek to invest in human capital through their hiring and training practices. "Since earnings are gross of the return on human capital, some persons may earn more than others simply because they invest more in themselves" (Becker, 1962, p. 48). Long and Caudill (1991) use human capital theory to suggest that the premiums earned by student-athletes may be attributable to the acquisition of skills and attributes valued by the labor market that are not academic in nature:

> Participation in college athletics may enhance self-control, perseverance and discipline, and may prepare the future employee to follow orders and cooperate in "team" production which increases efficiency (Alchian and Demsetz, 1972). Athletes may develop exercise, eating, and drinking habits that lead to better health and earnings potential than non-

> athletes. Lastly, varsity athletes may have relatively more "competitive" drive that ultimately results in greater career accomplishments, other things the same. (p. 526)

Long and Caudill used aggregate athletics data and did not differentiate revenue sports from nonrevenue sports. A critique of their study may suggest that the small percentage of male athletes who became professional football or basketball players were skewing the results. The NCAA reports that only 1.8% of college football players and 1.2% of men's basketball players become professional athletes (NCAA, 2009a). However, the high salaries of this subgroup may very well skew the early career earnings for male athletes. The age of the data is also a concern with Long and Caudill's study. Their sample included student-athletes that entered college in 1971. Looking at more recent data and earnings later in the career may yield interesting results and would help provide a more accurate picture of the true relationship.

Even if the premium earned by male athletes is not attributable to a professional athlete effect, there may be other explanations. Pascarella and Terenzini (2005) address a similar phenomenon when looking at the premiums earned by college graduates. Though it is difficult to pinpoint a single explanation, they list human capital theory, screening-certification, and credentialing as possible explanations. Screening-certification simply implies that employers use a given characteristic, like a college diploma or athletic status, as evidence that an individual has the "requisite competencies and values necessary for successful adaptation to complex technical and managerial jobs" (Pascarella & Terenzini, 2005, p. 445). Screening-certification represents especially interesting possibilities when trying to explain the premium to male athletes. Screening may suggest that employers use a student-athlete's successful completion of an athletic career as an indicator of desirable traits, like dedication, focus, and motivation. Pascarella and Terenzini describe credentialing as "the earnings bonus for completing the

bachelor's degree above and beyond the economic return for having the equivalent of four years of college (that is, 120 credits) but not completing a bachelor's degree" (p. 456). Credentialing implies that employers' decisions may not always be based on a rationale assessment of an employee's skills and abilities. Instead, the credential itself is valued. In terms of athletics, the credential may simply be an individual's status as a former athlete. It seems reasonable to assume that some employers may give preferential treatment to the former athletes whom they watched, admired, or rooted for. Regardless of the explanation, it is important to note the relationship between athletic participation and earnings for male athletes. Both the research findings and the current status of the ongoing debate about paying athletes are informative of the potential financial effects of athletics participation on student-athletes. To be sure, these financial effects are not the only effects of athletic participation evident in the literature.

Academic and Social Effects on Student-athletes

There is a large body of literature that considers the academic and social outcomes of athletics participation in higher education. The impacts on student-athletes' cognitive development and learning outcomes is included in this literature. While the results are somewhat inconsistent, much of the evidence associates athletic participation with negative outcomes (Pascarella & Terenzini, 2005).

Astin (1993) broadly showed that athletic participation in college was negatively linked with graduate school entrance exam scores, like the verbal portion of the Graduate Record Examination (GRE), Law School Aptitude Test (LSAT), and National Teachers' Examination. McBride and Reed (1998) similarly found that student-athletes, both male and female, had significantly lower critical thinking skills than non-athletes. McBride and Reed also found that male football and basketball players made lower gains in critical thinking skills during college

than non-athletes. However, a major weakness of both of these studies was that they did not account for confounding factors, like socioeconomic background and academic abilities, so these studies do not indicate whether the differences can be directly attributed to athletic participation.

Pascarella, Bohr, Nora, and Terenzini (1995) also looked at the cognitive impacts of athletic participation, focusing on the impacts in the first year. They controlled for confounding factors and found that male football and basketball players had significantly lower scores on end-of-first-year measures of reading comprehension and mathematics than non-athletes and even their counterparts that participated in nonrevenue sports. Pacarella et al. (1999) went on to show that similar results held for athletes after their second and third years. End-of-second-year writing skills scores were significantly lower for athletes in football and men's basketball than non-athletes, but scores for male athletes in nonrevenue sports were not significantly different from non-athletes (Pascarella et al., 1999). Similarly, football and men's basketball players had significantly lower end-of-third-year net reading comprehension and critical thinking scores than non-athletes; nonrevenue athletes' scores were once again not significantly different from non-athletes' scores(Pascarella et al., 1999).

One of the more interesting aspects of the Astin (1993), Pascarella et al. (1995), and Pascarella et al. (1999) studies were their findings related to female athletes. While athletic participation for women was found to be associated with lower general measures of cognitive development (Astin) and end-of-first-year measures (Pascarella et al., 1995), the same did not hold true for end-of-second-year and end-of-third-year measures (Pascarella et al., 1999).

There is some evidence that the gap in cognitive development for football and men's basketball players' compared to non-athlete students may widen as they matriculate through college. Pascarella et al. (1999) compared the end-of-second-year and end-of-third-year gaps

with Pascarella et al.'s (1995) first-year studies and found that the gap was actually greater for second and third year measures than first year scores.

While the literature is dominated by football and men's basketball, there is evidence that athletic participation impacts athletes in nonrevenue sports as well. Wolniak, Pierson, and Pascarella (2001) looked at the relationship between male athletic participation and four learning outcomes: Openness to Diversity and Challenge; Learning for Self-Understanding; Internal Locus of Attribution for Academic Success; and Preference for Higher Order Cognitive Activities. They found that, while football and basketball players did not show significant disadvantages compared to non-athletes, nonrevenue athletes did.

> [Nonrevenue athletes] tended to be the outlier group in terms of growth in learning orientations. Compared to their nonathlete counterparts, men participating in nonrevenue sports tended to be disadvantaged between .25 to .30 of a standard deviation in Openness to Diversity and between .21 to .51 of a standard deviation in Learning for Self-Understanding. (p. 619)

Not all of the evidence suggests a negative effect of intercollegiate athletic participation. Some studies have failed to find significant relationships or even positive associations. Gaston Gayles (2004), for example, showed that while academic motivation, ACT scores, and ethnicity were significant in predicting the GPA's of student-athletes, athletic motivation was not. In other words, athletes' motivation to excel in their sports was not significantly related to their academic performance. This does not concur with the findings of Simons, Van Rheenen, and Covington (1999), which suggested that athletic motivation detracted from academic performance. It seems somewhat counterintuitive as well; one would expect the most motivated

athletes to spend more time pursuing their athletic ambitions at the expense of preparing for their courses. However, Gaston Gayles' results suggest otherwise.

Umbach, Palmer, Kuh, and Hannah (2006) also showed that not all outcomes associated with athletic participation are negative. They found that student-athletes seemed to be as engaged in educationally purposeful activities as non-athletes. Male student-athletes were "as challenged academically, interact with faculty as frequently, and participate as often in active and collaborative learning activities" (Umbach et al., 2006, p. 718). Similar results were found for female student-athletes, with female athletes even showing an increased likelihood to interact with faculty and participate in active and collaborative learning activities compared to female non-athletes (Umbach et al., 2006, p. 718).

Other studies point out additional positive outcomes related to intercollegiate athletic participation. For example, studies have provided evidence that student-athletes are often more satisfied with their college experiences than non-athletes (Pascarella & Smart, 1991; Astin, 1993). Pascarella and Smart (1991) also found that athletes showed higher levels of social involvement during college and post-college self-esteem. This evidence suggests that, while studies have linked athletic participation with negative learning and cognitive development outcomes, athletic participation may result in other types of benefits for student-athletes.

Some of the previously discussed studies include evidence of conditional effects of athletic participation, but a few additional conditional effects deserve mention. Research has compared student-athlete experiences at different types of institutions. Bowen and Levin (2003), for example, looked at Ivy League institutions and concluded that student-athletes at highly selective institutions do not have the same collegiate experiences as non-athletes. While it makes sense that institution type would play a role in student-athlete experience, Umbach et al.

(2006) contradicts these findings. They found that student-athletes and non-athletes appeared to experience similar educational practices at all institution types within Divisions I, II, and III. However, they did find evidence that student-athlete experiences differed across divisions. Student-athletes at Division III institutions experienced higher levels of academic challenge, are more likely to interact with faculty, and are more likely to engage in active and collaborative learning activities than their student-athlete counterparts at Division I institutions (Umbach et al., 2006, p. 720). This is a result of students at Division III institutions in general being more likely to experience these outcomes. In other words, student-athletes' experiences may vary across divisions, but they may not differ within divisions. This study is also significant because it is one of the few that considers differences between the NCAA divisions.

Pascarella and Smart (1991) also looked at conditional effects, comparing the outcomes for African American student-athletes and Caucasian student-athletes. They found some evidence that intercollegiate athletic participation had stronger positive effects on social involvement and social self-esteem for African American males than Caucasian males (Pascarella & Smart, 1991, p. 129). Gaston Gayles and Hu (2009) is a more recent study that also found conditional effects of intercollegiate athletic participation. Their study looked at the relationships between student-athletes' background characteristics, engagement in educational activities, and cognitive and affective outcomes. They found that female and Black student-athletes reported higher levels of self-concept compared to male and White student-athletes (Gaston Gayles & Hu, 2009, p. 326). They also found that student-athletes in high profile sports, like men's football and basketball, reported less positive cultural attitudes compared to student-athletes in low profile, nonrevenue sports (Gaston Gayles & Hu, 2006, p. 324). These studies

show that the effects of intercollegiate athletic participation may be conditional on students' background and demographic characteristics, as well as the type of sport that they play.

Intercollegiate athletics' effects on academic performance and graduation rates are one of the more interesting areas of research. Evaluating academic performance of student-athletes versus non-athletes is one of the most basic studies that falls in this category. Maloney and McCormick (1993) looked at this comparison and found that athletes perform worse than non-athletes, even after accounting for their lower entrance exam scores and poorer preparation (Maloney & McCormick, 1993). The study goes further to look at in-season effects on academic performance. Perhaps not surprisingly, they found that athletes in football and men's basketball performed worse than non-athletes during their season. The disadvantage equates to a full letter grade in half of their classes (Maloney & McCormick, 1993, p. 566). On the other hand, athletes in football and men's basketball perform slightly better than non-athletes during the off-season, but not enough to offset the negative in-season effects. This makes sense as student-athletes are bound to spend more time practicing and participating in games during their season. Interestingly, the in-season effect does not hold for athletes in nonrevenue sports. Maloney and McCormick suggest that this can be attributed to coaches and administrators not putting as much pressure on the athletes in nonrevenue sports to perform (Maloney & McCormick, 1993, p. 567).

Intercollegiate athletics' effects on graduation rates are one of the more controversial topics covered in the literature. The NCAA is perhaps responsible for some confusion on the topic. They report graduation rates of student-athletes using a measure that they developed: the graduation success rate (GSR). This measure is necessarily greater than or equal to standard graduation rates since it allows institutions to subtract students who leave but would have been academically eligible had they returned.

Not surprisingly, much attention has been paid to the graduation rates of college athletes. The NCAA itself, as indicated by its special measurement, pays attention to graduation rates. In a November 2009 press release, the NCAA declared that student-athlete graduation rates had reached an all-time high and were higher than the rates of the general student body (NCAA, 2009b). In fact, there is scholarly research that supports this assertion. Long and Caudill (1991) showed that, overall, men and women athletes graduated at higher rates than non-athletes. However, the NCAA data shows that graduation rates can vary dramatically by sport (NCAA, 2009c).

DeBrock, Hendricks, and Koenker (1996) linked the graduation rates of student-athletes to their unique labor market opportunities, namely professional sports. They found evidence that graduation rates for student-athletes were impacted by the same influences as other students at the same institutions, but were reduced by opportunities in professional sports. For this reason, DeBrock, Hendricks, and Koenker conclude that absolute comparisons of graduation rates for student-athletes and regular students might not be a meaningful analysis. This study indirectly indicates that student-athletes benefit from labor market opportunities that do not exist for non-athlete students.

Discussion of Effects on Student-athletes

Student-athletes are perhaps the most affected stakeholders of intercollegiate athletics. Participation in college sports was found to be associated with both positive and negative outcomes in the literature. The strength of this body of literature is that the outcomes that are considered are varied and widespread. From an economic advantage represented by higher early-career earnings to various academic and social outcomes, there is at least some evidence for a wide range of potential outcomes of athletic participation for student-athletes. A potential

weakness of this body of literature may be the perceived importance of the findings. The economic outcomes are highlighted by a 4% early-career earnings premium for male student-athletes. Even if this premium represents a lasting effect, it may be viewed as a relatively small difference. Similarly, the higher satisfaction rates that student-athletes have with their college experiences might not be viewed as important. Other relatoinships presented in the literature are conditional or group-specific. These potential limitations may raise the question of whether this body of literature highlights meaningful, lasting outcomes of athletics participations on student-athletes.

Effects of Intercollegiate Athletics on Other Stakeholders

Higher education institutions and student-athletes are the primary stakeholders in intercollegiate athletics, but there are also other groups affected by their relationships with college sports. At least one of these groups, coaches, has an obvious relationship, while others, like non-athlete students and the communities that host sporting events, may also be affected by their relationships with college sports. The literature related to how these groups are impacted by athletics is less developed, but it is still possible to identify some likely ways in which each group is affected.

Coaches

College coaches, especially in the main revenue-generating sports of football and men's basketball, appear to receive substantial economic benefits from intercollegiate athletics. Coaches' salaries in excess of $1 million are not uncommon in big-time college sports. The University of Alabama paid its head football coach $5.5 million in 2012 (USA Today, 2012). Supply and demand economics would predict that high salaries result from insufficient supply to meet the demand for quality coaches, yet many coaches earn large sums of money while leading

mediocre programs. In other words, their performance does not indicate skills that they are in short supply. Sperber (1990) reflects on this phenomenon and recognizes that there are superstar coaches that bring unique skills and superior results to their programs, but for every superstar, there are dozens of coaches with mediocre results also earning high salaries. In short, labor markets for big-time college coaches, at least on the surface, do not appear to be controlled by competitive supply and demand forces.

The economics literature also suggests that coaches' salaries are so high because of NCAA restraints on the labor market (i.e., student athlete compensation). These labor market restraints are a main reason that some economists consider the NCAA an economic cartel (e.g., Eckard, 1998; Farmer & Pecorino, 2010; Fleisher, Goff, & Tollison, 2002; Fort & Quirk, 1995; Koch, 1971, 1973, 1983). A cartel is simply a group of firms colluding to maximize profits (Miller & Meiners, 1986). Collusion is illegal in the United States under the Sherman Antitrust Act of 1890, which is the focus of the ongoing O'Bannon v. NCAA legal case discussed earlier.

Farmer and Pecorino (2010) directly suggest that the cartel agreement to restrict compensation to athletes raises coaches' salaries. Zimbalist (2006) makes the comparison of the labor markets of college and professional sports:

> How much do you think MLB managers would be paid if every major league team was exempt from taxes, was supported by million-dollar operating subsidies from both a university and a state budget and the players' salaries were constrained by law to be no higher than $40,000 annually. (p. 281)

High salaries and an uncompetitive labor market may lead to significant economic benefits to college coaches. There may be additional effects of athletics on coaches that have not been explored in the literature yet, and not all are necessarily positive (e.g., health effects).

Non-athlete Students

Non-athlete students may also be impacted by the athletics programs at their institutions. One of the more interesting studies involving intercollegiate athletics and graduation rates actually looks at the relationship between athletic program success and the graduation rates of the general student population. Mangold, Bean, and Adams (2003) relied heavily on Tinto's (1975) model of student persistence for their theoretical framework in this study. They specifically focused on the role that interactions and integration play in creating commitment, which leads to persistence. They point out that student involvement inside and outside the classroom leads to integration and institutional commitment under Tinto's model. "Intercollegiate sports such as football and basketball are often viewed as catalysts for student interaction, thus facilitating social involvement and ultimately enhancing student institutional affiliation and commitment" (Mangold et al., 2003, p. 543).

The researchers went on to test their hypothesis that successful athletic programs would spawn interactions among students, leading to higher levels of commitment and persistence. However, their results failed to support the hypothesis. In fact, they found that basketball success and strong overall sports programs are negatively associated with graduation rates, while football success had a positive but nonsignificant relationship with graduation rates (Mangold et al., 2003). These findings are very interesting and seem to suggest that athletic programs do not provide the types of interactions that lead to academic integration and persistence under Tinto's model. In fact, Mangold et al. (2003) suggest that while athletics may produce peer interactions, the type of interactions may be detrimental to academic integration.

It follows that such ties could, and most likely would be utilized by students to persuade their peers to participate in recreational group activities directly related to the emergent

> success of their schools intercollegiate athletic team (pep rallies, or viewing athletic competition in group setting), even when such participation might conflict with demands tied to overall academic success (preparing for an exam, or writing a paper). (p. 555)

Their rationale seems to be consistent with Astin's (1993) assertion that peers have the most influence on college students.

However, Mixon and Trevino (2005) contradict these findings. They actually found evidence supporting Mangold et al.'s (2003) original hypothesis. Mixon and Trevino found that football success had a positive and statistically significant relationship with freshman retention rates and graduation rates. This finding appears to run counter to the conventional wisdom that students choose to follow a successful football team at the expense of academics. Mixon and Trevino conclude:

> Our evidence supports the "football chicken soup" hypothesis, as opposed to the "football fever" idea supported in previous work, in that football appears to (perhaps) expand a university's/college's opportunity set and provide students with a respite from the psychic costs associated with college life. (pp. 101-102)

While the evidence is inconsistent, it is important to note that athletics may produce outcomes for the vast majority of higher education students that do not participate in college sports.

Local Communities

The local communities surrounding higher education institutions might also be expected to benefit from hosting athletics events. Economic impact studies are fairly common in athletics and are often used to justify taxpayer support for professional sports stadiums. Likewise, one might expect collegiate sports to produce significant economic impacts, but the evidence supporting this hypothesis is inconsistent at best.

Baade, Baumann, and Matheson (2011) looked at the effects of intercollegiate athletics events on local economies in Florida. Basketball games at the University of Florida and Florida State University were not associated with a significant increase in economic activity. Football games were associated with a $2 million increase in taxable sales in the host city. However, there was evidence that this increase may be offset by decreases in economic activity in the rest of the state of Florida. Baade, Baumann, and Matheson conclude that, although taxable sales increase, large public subsidies are not justified by the relatively small increase.

Coates and Depken (2009) also considered the economic impact of intercollegiate athletics on local economies. They specifically considered the effects of football contests at four institutions in the state of Texas: University of Texas at Austin, Texas A&M University, Texas Tech University, and Baylor University. Their findings were consistent with Baade, Baumann, and Matheson (2011), with neither study producing evidence that intercollegiate athletic events have sizeable effects on economic activity in the local community. In fact, Coates and Depken found evidence that some events expected to lead to positive economic impacts actually had negative relationships with sales tax revenues. They found that the rivalry games between Texas and Texas A&M were associated with a decrease of $410 thousand in sales tax revenues when played in Austin and a decrease of $55 thousand when played in College Station. Although local communities might be expected to benefit significantly from hosting intercollegiate athletics events, there is only marginal and inconsistent evidence supporting this hypothesis.

Professional Sports Leagues

The professional sports leagues also have a stake in college sports. On the surface it seems that they benefit in very direct ways. College sports develop players and provide scouting opportunities for professional teams. This is especially true in football and men's basketball.

The National Football League (NFL) and the National Basketball Association (NBA) do not have developed minor league systems that perform these functions. Interestingly, it is Major League Baseball, which has a robust player development system, that provides the only subsidy, though modest, to the NCAA for this service (Zimbalist, 1999). Intercollegiate athletics essentially serve these functions with no cost to the professional leagues, representing a potentially large economic benefit.

This relationship, in addition to being intuitive, is supported in theory. Fort and Quirk (1995) and others have described professional team sports as business cartels. One of the behaviors of a cartel is to control its inputs. Through age and other eligibility requirements, the NFL and NBA essentially force a large percentage of their future players into intercollegiate athletics where they can be developed and scouted. This reduces the risk to these leagues.

Discussion of Effects on Other Stakeholders

Still other outcomes of intercollegiate athletics do not fit neatly into a single stakeholder group. Adler and Adler (1988), while studying loyalty, found that college athletics espoused intense loyalty:

> The type of loyalty we have discussed here, as noted earlier, is different from that found in most other organizations. College athletic teams generate an intense loyalty that surpasses the more bland forms of organizational commitment commonly found in ordinary organizations. (p. 413)

The results of their case study attributed the development of this loyalty to five conceptual elements: domination, identification, commitment, integration, and goal alignment. It is not clear which stakeholders primarily benefit from this loyalty, but it seems to be a positive outcome that potentially benefits everyone involved.

The literature related to the outcomes of intercollegiate athletics for other stakeholders besides higher education institutions and student-athletes is relatively underdeveloped. Some of the outcomes that have been researched, like the impact of college sporting events on local economies, are underwhelming. It may be the case that the outcomes for coaches, professional sports leagues, and others are very robust, but there simply has not been adequate research to support them. The outcomes for these stakeholder groups represent a potential area for future research.

Discussion of the Effects of Athletics

One of the themes throughout the body of literature that investigates the effects of intercollegiate athletics is that these outcomes are not always clear-cut. Some studies contradict each other, making it difficult to identify consistent findings that can be reported with confidence. Nevertheless, the research provides evidence that higher education institutions and student-athletes, the two most prominent stakeholders of intercollegiate athletics, may experience both economic and academic/social outcomes as a result of their participation in athletics. Furthermore, both positive and negative outcomes are evidenced in the literature.

It is important to note that not all of the outcomes to intercollegiate athletics are economic. The commercialization of college sports receives attention in the media and this may make it convenient to only think of the benefits and costs of athletics in economic terms. A strength of the literature reviewed here is that it avoids this trap and identifies many non-economic outcomes of athletics. Studies considering the effects of athletic success on applications and student body composition (e.g., Toma & Cross, 1998; McCormick & Tinsley, 1987; Mixon, 1995; Bremmer & Kesselring, 1993) are indicative of the literature's broad scope.

Three distinct limitations raise concerns about this body of literature. Issues of generalizability, significance, and completeness are common throughout the literature. The question of generalizability is raised by sampling biases in the studies. Many studies only include big-time college sports, typically defined as NCAA Division I programs, in their samples. This is likely a result of data availability. However, findings based on Division I data may not be generalizable to Division II and III institutions or student-athletes. Division I accounts for only 31% of all NCAA institutions and there are significant differences in the profiles of the institutions that comprise each division (NCAA, 2009d).

In addition to a potential sampling bias, much of the research on this topic is narrowly focused on the benefits of athletic success. These specific benefits, no matter how robust they are, can only be realized by institutions that experience athletics success. The number of successful teams and programs may be a fairly limited number of institutions. Toma and Cross (1998), for example, only consider the effects of national championship seasons in men's basketball and football on applications. This is the ultimate measure of success. Only two institutions per year, one from each sport, experience this degree of success. The age of many of the studies reviewed here also raises concerns about the generalizability to present day conditions. Higher education and intercollegiate athletics have changed considerably in recent years, so findings based on data that is more than ten years old may simply not hold today. These concerns about the generalizability of the studies to a broad population of institutions, student-athletes, or other stakeholders represent one of the limitations of this body of literature.

Another potential limitation is the perceived significance of some of the outcomes outlined in the literature. The early-career earnings premium to student-athletes is a good example of this question of whether the finding is meaningful. Although the premium is

statistically significant in the study, it is a relatively small difference (4%) between student-athletes and non-athletes. Observers may view this as a relatively unimportant finding. Similarly, conditional findings related to specific subgroups of student-athletes might not lead to a better overall understanding of the outcomes of intercollegiate athletics. The fact that female and Black student-athletes have higher levels of self-concept compared to male and White student-athletes (Gaston Gayles & Hu, 2009) does not identify the general effect of intercollegiate athletics on all student-athletes. These concerns about the importance of some of the relationsihps identified in the literature represent another limitation of this body of literature.

The third potential limitation of these studies is related to the questions and topics that they leave unanswered. Many of these involve the effects of intercollegiate athletics to the other stakeholders, like coaches and professional sports leagues. There is good reason to believe that these stakeholders benefit greatly from their links to intercollegiate athletics, but the scholarly literature is sparse or nonexistent in these areas. In other words, these interesting connections are neither validated nor contradicted in the literature, leaving observers to draw conclusions from limited information.

Finally, causal relationships are also lacking in the current literature. While, the researcher and observer alike desire to know the causal effects of athletics, the vast majority of the current literature is relational, and while they certainly provide evidence of relationship, making causal inferences from these studies is perilous. Omitted variable bias is a difficult barrier to overcome, but Cellini (2008) describes quasi-experimental techniques that may be useful in addressing this barrier and allowing for causal inferences. These techniques are gaining in popularity in the education literature and have even been used in at least one recent intercollegiate athletics study; Anderson (2012) used propensity score matching and instrument

variables in a study of intercollegiate athletics, which will be discussed in more depth in Essay 3. The empirical studies in Essay 2 and Essay 3 both employ quasi-experimental techniques.

Overall, the limitations of this body of literature involve questions about the generalizability, significance, and completeness of some of the studies. In addition, there are topical areas that are under-researched, including the effects on other stakeholders, like coaches and non-athlete students, and the financial connections between athletics activities and higher education institutions. All of these limitations may be addressed in future research on the effects of athletics in higher education.

Summary of Existing Literature

This literature review shows that intercollegiate athletics and higher education have a complex relationship. The relationship is longstanding, but has been marked by tension and failed attempts to align their priorities. The relationship is also marked by athletics' strong financial dependency on their host institutions, which runs counter to the common perception that big-time intercollegiate athletics are self-sufficient.

Evidence from the literature suggests that several different stakeholders may experience outcomes from intercollegiate athletics in different ways. Institutions may experience increases in donations from alumni and increases in applicants when their teams win. Student-athletes may realize higher earnings, and varied academic and social outcomes from their participation in intercollegiate athletics. Other stakeholders are less researched, but nevertheless there is evidence of some relationship between athletics and these other stakeholders. For example, the findings for the relationship between local communities and athletics events are mixed. Coaches and professional sports leagues might be the biggest beneficiaries of college sports, but the research is very sparse making it impossible to draw any meaningful conclusions.

This literature review understandably leads an observer to ask: are intercollegiate athletics are worth the financial investment made by higher education institutions? And if institutions are going to participate, what affects the size of the revenues that they are able to generate from these activities? These questions are, of course, much too general to address directly, but the following two empirical studies are intended to provide insight into these types of questions. Essay 2 specifically addresses institutional subsidies to athletics, seeking to analyze the effect of winning on the level of athletic subsidy. The identification and utilization of instrumental variables in Essay 2 is a significant contribution to the existing literature. Essay 3 tests the effects of making the NCAA men's basketball tournament on basketball-specific, total athletic, and institutional revenues using a regression discontinuity design. This design is also a contribution to the existing literature. Taken together, these two empirical studies address a gap in the literature and further the understanding of the financial relationship between intercollegiate athletics activities and higher education.

ESSAY 2

THE EFFECTS OF ATHLETICS WINNING ON INSTITUTIONAL SUBSIDIES TO ATHLETICS

Many higher education institutions participate in intercollegiate athletics. Almost without exception, these participating institutions also choose to subsidize their athletic departments with institutional funds. Subsidies are an interesting research topic because they provide insights into how institutions set and fund their priorities. News articles (e.g., Berkowitz, Upton, & Brady, 2013) and even some research articles (e.g., Denhart & Vedder, 2010) have framed athletic subsidies in a negative light. However, athletic subsidies should not be viewed as necessarily inappropriate. They are an interesting research topic because they may provide insight into institutional priorities and practices, but it is not the intention of this study to make any judgment about the normative value of athletic subsidies. Deficits, which will be shown later, are not desirable, but they are not necessarily indicative of out of control finances. Likewise, institutional support for athletics may run counter to the conventional wisdom that athletics are self-supporting, but it is not necessarily indicative of misplaced priorities. Judgments on institutional priorities would require full context, and consideration of the myriad of outcomes associated with intercollegiate athletics, many of which were outlined in Essay 1.

Higher education is no stranger to subsidization. Winston (1999) details the "awkward economics" of higher education in which the cost of education is subsidized by an institution's donative wealth. A Delta Project report (2010) simplifies this concept and shows how the full cost of educating a student (at not-for-profit institutions) consists of two elements: the student's share of tuition and the subsidy from state appropriations or an institutions donative wealth. In

other words, the cost of higher education may be heavily subsidized from institutional revenues other than tuition.

The Delta Project (2010) also details a different type of subsidization that is common in higher education.

> Cross-subsidization is endemic in higher education. For instance, revenues generated from undergraduate students who enroll in low-cost disciplines such as humanities and social sciences, help pay for high-cost disciplines – fine arts, agriculture, law, and engineering, for example. Similarly, lower division classes are less expensive than upper division classes…Since lower division students typically pay the same tuitions and fees as upper division students, the "excess" revenue from their tuitions helps underwrite the higher costs of upper division education. (p. 4)

The report also points out that graduate education is typically subsidized by undergraduate education and that the use of tuition discounting and direct institutional financial aid is increasing (Delta Project, 2010).

When considering the merits of subsidization, in general, the role that performance plays in subsidization decisions would seem critically important. However, performance in most higher education contexts is difficult to measure accurately and uniformly across departments, colleges, or campuses. Athletics, on the other hand, offer several readily accessible performance measures. While a comprehensive measure of an institution's overall athletics success may not be available, performance in individual sports can be measured by the wins and losses that the teams incur. In addition to these standard metrics of success, sports statistics are available to provide additional context when needed. This is why athletics offers a unique opportunity to study subsidization in higher education.

Besides providing insights into institutional funding priorities, athletic subsidies are also an interesting and timely research topic due to the attention that they have recently received in the popular press. Much of this attention is likely due to the availability of data from the USA Today athletics finance database. Some attention has even been given to the relationship between subsidies and other contemporary athletics issues, like conference realignments. For example, Hinnen (2011) discusses the $12 million subsidy that Rutgers University provides to its athletic department and the tension that this causes with the faculty. When it was announced that Rutgers would be joining the Big Ten conference, the expected increases in revenue resulting from the conference switch were cited as a primary benefit and were expected to eliminate the need for the institution's large athletic subsidy (Staley, 2012; Weese, 2012). This example illustrates that subsidies may impact a host of institutional behaviors and their effects may reach far beyond athletic enterprises.

The size and mechanics of institutional subsidies vary across institutions. This study attempts to add to the current understanding of how institutions fund intercollegiate athletics by addressing the following research question: *What effect does athletic performance have on the levels of athletic subsidies?* A related, but separate, research question may ask about the effect on athletic performance of revenues, of which subsidies may be one source. While this alternative question may be of specific interest to athletic directors, the present study focuses on understanding the institutional behavior represented by subsidies. In this study, number of wins or winning percentage in men's basketball and football will be used as a measure of athletic performance. To answer the research question, panel regressions and an instrumental variables approach will be used. Control variables for this analysis will be chosen based on a review of the relevant literature.

Review of the Literature

It is helpful to begin with a definition. In theory, athletic subsidies are simply institutional resources that have been directed to help fund athletics. Because athletic departments also derive revenues from their own operations, the institutional resources can be viewed as "subsidizing" these activities. These subsidies range from planned, direct budget transfers to covering the deficits generated by athletic departments. This support highlights the strong financial relationship between institutions and their athletic departments. The NCAA refers to subsidies as "allocated revenues," which include student fees, direct institutional aid, indirect institutional support, and direct governmental aid (Fulks, 2012). These revenue sources are distinct from revenues generated through athletic activities (e.g., ticket sales and media contracts). Because of the institution's discretion over these resources, they may be viewed as allocations to athletics instead of academic or other institutional initiatives and priorities. The aggregation of these four revenue streams (i.e., student fees, direct institutional aid, indirect facilities and administrative support, and direct state aid) is a common operational definition of athletic subsidies (Denhart & Vedder, 2010; Lederman, 2010; Fulks 2012). However, this study is interested only in the portion of the subsidy attributable to institutional funds and institutional decision makers. Therefore, the operational definition for this study will exclude the direct state aid portion of athletic subsidies, capturing only student fees, direct institutional aid, and indirect facilities and administrative support. While this definitional distinction is important for the interpretation of the results for this study, excluding direct state aid is not expected to have a major impact on the actual results since direct state aid is far less common than the other

components of athletic subsidies and represent only approximately 5% of athletic subsidies, on average.[2]

Institutional subsidies to athletics represent a direct financial impact of athletics on higher education institutions. Studies have shown that the flow of financial support typically moves from the university to the athletic department (Kahn, 2007), and data from this study's sample confirms this finding. The average amount of total institutional subsidies at FBS subdivision institutions (NCAA subdivisions are defined in more detail below in the methods section) in 2012 was $9.9 million, with the highest subtotal at the Rutgers University ($28.0 million). Seven of the 102 FBS institutions in the sample provided no institutional subsidies to their athletic departments in 2012: Louisiana State University, Ohio State University, Penn State University, Purdue University, University of Nebraska, University of Oklahoma, and University of Texas. At FCS institutions, the average institutional subsidy was $10.0 million in 2012, with the highest subtotal at James Madison University ($27.3 million). At Other Division I institutions, the average subsidy was $8.8 million in 2012 and the highest amount was at the University of North Carolina at Charlotte ($18.3 million). These institutional resources represented, on average, 17.3% of total athletic department revenues for FBS institutions, 68.9% for FCS institutions, and 78.0% at Other Division I institutions. In addition, Kahn (2007) found that each of the NCAA's Division I subdivisions produced net deficits when institutional subsidies were excluded. These simple analyses seem to suggest that big-time college sports are not big-time financial contributors to their host institutions, which runs counter to the conventional wisdom. The financials of big-time college sports participants reveal that only a

[2] Even this percentage is likely skewed upward. Air Force and Army record 13 of the 14 largest values for direct state aid in the sample. These institutions should receive no state support, only federal support, so this is likely a definitional inconsistency. Because of missing values for covariates, these observations are not included in the testing sample for this study.

handful of the largest programs do not rely on institutional support for at least a portion of their budgets.

Denhart and Vedder (2010) examined athletic subsidies in more detail. They analyzed the relationship between various institutional characteristics and athletic subsidies and found that lower enrollments, lower institutional wealth, and higher percentages of Pell-eligible students were associated with higher athletic subsidies (Denhart & Vedder, 2010). Equating athletic subsidies to a tax on institutional revenues and students, they claimed that their findings suggest that athletic subsidies are a regressive tax, disproportionately burdening poor institutions and students that can least afford to pay. While informative for the present study, Denhart and Vedder's work considers cross-institution differences, but does not attempt to explain why these differences exist or to make causal inferences. This study, on the other hand, focuses on the role that performance plays in subsidy decisions within institutions and gets closer to determining causal relationships through the use of a two-way fixed effects panel model and an instrumental variables analysis.

There are critics of using the existence of athletic subsidies as proof that an overall economic benefit for institutions does not exist. Goff (2000), for example, claims that accounting practices mask the true economic impact of athletics on institutions. He claims that athletic revenues are often attributed to non-athletic accounts and grants-in-aid are valued at list price rather than incremental cost to the institution. Subsidies, then, could be viewed as means to reverse the effects of these accounting practices that understate athletic department revenues and overstate athletic expenses. Goff believes that athletics are net financial contributors to higher education institutions after these types of adjustments are made, although he considers institutional subsidies as athletically generated revenues.

The literature shows that a strong financial connection exists between intercollegiate athletics and their higher education institutions. The present study seeks to add to the understanding of factors that shape this financial relationship. Despite some counter examples, most of the evidence points to a flow of financial resources from institutions to their athletic enterprises. However, there may be nonfinancial benefits to the institution or to student-athletes that justify the subsidies to athletics. A more comprehensive review of the literature related to the varied impacts of athletics on institutions, student-athletes, and other stakeholders is presented in the first essay of this volume.

Theoretical Framework

Rational choice theory and the closely related game theory can be used to help predict what factors might impact the size of the institutional subsidy given to athletics. Rational choice theory basically states that decision makers will attempt to optimize their expected utility. This theory is focused on the decision maker. In the case of subsidies, the decision makers are the individuals that are responsible for an institution's allocations to athletic departments. These may include presidents, chancellors, or governing boards. The decision-making authority may rest with different individuals at different institutions. Athletics is one of many priorities that these decision makers have to balance, and they are likely attempting to optimize their athletic departments to a certain size and scope that may vary across institutions. It should be noted that the athletic director would not be the decision maker of interest. While athletic directors play a clear role, they would not be primarily responsible for the allocation of institutional resources to athletics.

The foundation of rational choice theory and game theory could be considered to be Blaise Pascal's work on expected value from the 17th century. Expected value is defined as the

sum of the possible outcomes multiplied by their probability of occurring. Pascal used this concept in his famous wager in the context of a discussion of the proper response to the prospect of eternal life (Pascal, trans. 1995). Expected value may also be called expected utility when referring to a decision making process. The expected utility for each alternative decision can be described as the sum of the utility/benefit of outcomes multiplied by the probability of each outcome. Rational choice theory posits that decision makers select the alternative that optimizes their expected utility.

While rational choice theory is the predominant theory within neo-classical economics today, it is not without its critics. Some of these critiques may be relevant to the application of the theory to the decision to subsidize intercollegiate athletics. The most basic critique of rational choice theory is that its assumption of complete and perfect information in the decision making process is impossible. Simon (1955, 1972) has pointed out that the decision maker's ability to optimize his expected utility is bounded by the information that he has, as well as his ability to process the information. Under bounded rationality, decision makers are still attempting to optimize their utility, but they are dealing with incomplete or imperfect information. The result is that they will choose the alternative that they believe is optimal, even if it is not.

Bounded rationality provides a model for understanding how higher education decision makers might choose to subsidize intercollegiate athletics. While the outcomes of athletics contests are easily measured as wins or losses, the effects of athletics on institutions are not always easily identifiable. As evidenced from the literature, some of the potential benefits of athletics are noneconomic or difficult to quantify, like the academic benefits to student-athletes and any advertising effect that institutions may experience as a result of their athletics programs.

In other words, it is impossible to assign a dollar amount to these benefits with complete accuracy. As a result, higher education decision makers are necessarily acting on imperfect information when they make decisions on the subsidies provided to athletics. Nevertheless, these decision makers can be expected to attempt to maximize utility.

Based on the assumption that they are seeking to maximize utility, it is possible to build a model of factors that might be expected to impact the size of the subsidy provided to athletics at an institution. The dependent variable for such a model is the level of the subsidy provided to athletics. In order to answer the research question and assess the impact of winning on subsidies, the independent variable of interest is a measure of athletics success. My hypothesis that winning has a positive effect on institutional subsidies is discussed in more detail below. Control variables include ticket sales revenue, total institutional operating revenues, student full-time equivalent (FTE) enrollments, and the number of sponsored sports as factors that potentially impact higher education leaders' decisions regarding subsidies to athletics. Insights from the literature review informed the selection of these variables and the hypothesized direction of their relationships with the level of subsidies provided to athletics. Each of these variables is discussed in turn below.

The independent variable of interest – athletic department success – is somewhat difficult to quantify, but this study uses number of football or men's basketball wins as proxies. These two sports are the key revenue generators for Division I athletic programs. The literature suggests that many of the institutional benefits to athletics are contingent upon success and winning in these sports, like the advertising effect (Toma & Cross, 1998; McCormick & Tinsley, 1987; Mixon, 1995) and any fundraising benefits (Baade and Sundberg, 1996; Grimes and Chressanthis, 1994; Humphreys and Mondello, 2007; Sigelman and Bookheimer, 1983). While

these benefits can be difficult to quantify, they would seem to be desirable for decision makers. As such, institutional leaders may reward these outcomes by making additional allocations to athletics. For this reason, I expect measures of men's basketball and football wins to have a positive effect on the size of the institutional subsidy.

Ticket sales revenue serves as a proxy for the ability of an athletic department to generate independent revenues. I expect decision makers to view more athletic revenues as a signal that the athletic department needs fewer institutional resources. Decision makers, then, may derive more utility from allocating resources to other institutional priorities instead of athletics. In other words, I expect subsidies to decline as athletic departments are able to generate revenues from sources outside the university, like ticket sales. An alternative hypothesis might be that decision makers will attempt to amplify athletic revenues by investing even more institutional resources. This would make sense if institutional decision makers expect to produce $3 in athletic revenue for every $1 in institutional subsidy, for example. However, because athletics is only one of many priorities that institutional decision makers balance, the expectation for this study is that institutional decision makers will decrease subsidies as ticket sales increase so that they can allocate those resources to other institutional priorities.

Total institutional operating revenues are one measure of institutional size. It can be considered a measure of the resources that institutional decision makers have to allocate to their priorities. All things being equal, one would expect all campus units, including athletics, to benefit from larger operating revenues since decision makers have more resources to allocate. I expect an institution's total operating revenues to have a positive relationship with the size of the athletic subsidy.

FTE enrollments can also be viewed as a measure of institutional size as well, and larger student bodies represent potentially larger numbers of constituents interested in athletics. These constituents/fans may exert influence on decision makers to allocate resources to athletics. This rationale is consistent with Humphreys (2006), who discussed the possibility that fan bases exert influence on state legislatures when determining state appropriations to higher education institutions. The literature review also alludes to potential positive effects of athletics on non-athlete students (Mixon & Trevino, 2005). Larger enrollments would mean that more students enjoy these benefits. If decision makers believe that their subsidy decisions impact the benefits to students, they may feel compelled to increase athletic subsidies as enrollments increase. Enrollments are also a proxy for fee-paying students on campus. Since athletics fees are a common component of institutional subsidies, total subsidies may rise – depending on the per student fee amount – as enrollments increase at institutions that have athletic fees. For these reasons, I expect FTE enrollments to have a positive effect on the size of the subsidy.

The number of sports sponsored at an institution provides insight into the administration's perception about the proper scope of the athletic department. Administrators may use subsidies to optimize or maintain the scope of the athletic department at the desired level. Fielding more sports requires additional resources to cover the additional expenses, potentially creating a greater need for institutional subsidies. For this reason, it is expected that subsidies are positively related with the number of sponsored sports.

Data and Methods

This analysis uses a panel dataset constructed from five primary sources: the USA Today Athletics Finance Database, Jeff Sagarin's Ratings (published by the USA Today), the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) and

Equity in Athletics Disclosure Act (EADA) databases, and the NCAA. In addition to these primary sources, consumer price index (CPI) data from the U.S. Bureau of Labor Statistics was also used.

The athletics finance data was obtained from USA Today. USA Today has compiled an athletics finance database by submitting Freedom of Information Act (FOIA) requests to institutions requesting their financial submissions to the NCAA. (An example of an institution's submission to the NCAA that was obtained from the USA Today is included in Appendix A.) Only public institutions are required to respond to these FOIA requests, so the sample is limited to these institutions. The NCAA has more comprehensive data that would include all of their member institutions, but they are not willing to share this data for research purposes.[3] As such, the USA Today dataset represents the best available data related to athletics finance. These are self-reported, unaudited financial data, so definitions and accounting practices may vary somewhat across institutions.

The USA Today data only includes institutions in the NCAA's Division I. When considering football data – like number of wins – the analysis will be further limited to institutions that participate in football and belong to the Football Bowl Series (FBS) or Football Championship Series (FCS) subdivisions. The FBS subdivision is the NCAA's most prestigious division and was formerly known as Division I-A. The FCS division was formerly known as Division I-AA. Both of these subdivisions require participation in football. The distinction between the two is in their postseason football formats, with the FBS teams participating in bowl games and FCS teams participating in a playoff system.[4] Because of this difference and the resulting difference in possible number of games played, the football subdivisions will be

[3] I contacted the NCAA's Director of Research in the spring of 2012 and was informed that the association's membership agreement does not allow for the release of the financial data that the NCAA collects.
[4] The FBS will host bowl games and a limited playoff system beginning in 2014.

analyzed separately when using the wins variable and jointly by substituting winning percentage as the independent variable of interest. Division I also has a small number of institutions that do not participate in football. Collectively, these subdivisions (FBS, FCS, and Division I non-football institutions) are what most observers would consider big-time college sports. There are no subdivisions for Division I NCAA basketball, and all institutions are eligible for the same 68-team postseason tournament. However, the six largest athletic conferences (ACC, Big East, Big Ten, Big 12, Pac-12, and SEC), referred to as the BCS (Bowl Championship Series) conferences[5], are typically overrepresented in the postseason tournament. Given this reality, separate analyses for BCS conference institutions and non-BCS conference institutions will be run, in addition to the full model, to assess any differences across these subgroups.

A unique, panel dataset spanning the year 2005-2012 was constructed for this study. 2005 is the first year of data available in the USA Today Athletics Finance database. 2012 is the most recent year with data available for all of the measures used in this study. The USA Today database includes several variables, but the components that comprise institutional subsidies (i.e., student fees, direct institutional support, and indirect facilities and administrative support) are of particular interest to this study. Ticket sales revenues were also obtained from the USA Today Athletics Finance Database. The sport count variable was derived from participant data available in the Equity in Athletics Disclosure Act database. Athletics outcomes measures (e.g., number of wins for basketball and football) were collected from the NCAA. The final two data elements in the model, FTE enrollments and institutional revenues, were obtained from the Integrated Postsecondary Education Data System (IPEDS), which is maintained by the U.S. Department of Education. Points per game and strength of schedule variables, which will be used in the

[5] The BCS conference distinction is related to football since these conferences have secured automatic bids to the BCS bowl games; however, the term is used in this study to simply designate the six largest athletic conferences.

instrumental variables approach, were obtained from the NCAA and Jeff Sagarin's published ratings, respectively. All of these data elements were merged by IPEDS institution codes to produce the final data set. Table 2.1 shows the variable list and the corresponding sources.

This analysis employs two-way fixed effects models with a panel dataset. The dependent variable for all of the primary models is the institutional subsidy provided to athletics in the following year. This represents the total of direct institutional aid, indirect facilities and administrative support, and student fees from the USA Today database. It is necessary to use a lead value for subsidies since portions of the subsidy may be determined before the academic year. Student fees, for example, are most likely determined before the start of the academic year, which would precede any effect of athletic success, which is the focus of the research question. Current year results, on the other hand, would be expected to influence next year's budget allocation decisions. Since universities' fiscal years typically follow the traditional academic calendar with a start during the summer months (e.g., July 1), the previous season's results would be the most recent available measure of athletic success when budgets are approved. Goldstein (2005) describes the college and university budgeting cycle as an iterative process, but he places next year's budget approval in the May to June timeframe, which would put it shortly after the conclusion of the current year's basketball season.

The independent variable of interest is a measure of athletics success, which is being measured by winning in the two highest profile sports: men's basketball and football. The National Association of Collegiate Directors of Athletics publishes an annual ranking of athletic departments (called the Directors' Cup), which was considered as possibly a more comprehensive measure of athletics success. However, not all sports are necessarily scored for each institution and different sports are scored differently based on the postseason format. For

example, a championship in men's basketball or men's water polo is worth 100 points, but a second place finish in these sports is worth 90 and 70 points, respectively. Furthermore, not all Division I institutions are ranked each year, creating missing data. These limitations present challenges in using the Directors' Cup ratings and rankings in research studies like this one. In the absence of reliable comprehensive measure, basketball or football wins (or winning percentage) will serve as measures of athletics success.

All of the models include the same set of control variables previously discussed as potentially impacting the level of the institutional subsidy for athletics: number of sponsored NCAA sports, enrollment, total institutional revenue, and ticket sales. Subsequent analyses will include the number of football wins and will be limited to the FBS and FCS subsets of the data. Year and institution fixed effects are also included in these models. Panel ordinary least squares (OLS) estimates are generated for the coefficients for each of the independent variables. The panel data requires special treatment in the regression analysis. I include dummy variables for each of the years and fixed effects for the institutions in the dataset. This controls for the natural correlation that exists in a single institution's data across years and essentially generate year and institution fixed effects. The year fixed effect controls for common time trends and the institution fixed effect control for unobserved heterogeneity. The general model can be described in the following equation:

$$Y_{i(t+1)} = \beta W_{it} + \gamma \mathbf{X}_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \qquad (2.1)$$

Where $Y_{i(t+1)}$ is the amount of the total subsidy at institution, *i,* in year, *t +1*; W_{it} is a measure of athletics wins (e.g., football or men's basketball); β is the coefficient for the success variable in the model; $\mathbf{X}_{it}$ is a matrix of control variables; γ is scalar of regression coefficients; α_i is the institution effect; λ_t is the year effect; and ε_{it} is the error term.

Several models are run from the general equation. Basketball and football success are considered separately, as well as in a combined model. When football wins are used in a model with all institutions, winning percentage will need to be used in the place of number of wins. This is necessary because of different postseason formats and the resulting differences in the total possible games played by teams from each subdivision.[6]

In addition to the two-way fixed effect models, an instrumental variable approach is also employed. The two-way fixed effect model assumes that institutional subsidies are determined by the explanatory variables but do not drive changes to the explanatory variables themselves. In reality, the relationship between subsidies and the independent variables may be more complex. For example, the two-way fixed effects model assumes that institutional leaders weigh all other information to make the ultimate decision on the level of subsidy to provide to athletics. This ignores the possibility that subsidies are used as criteria for other decisions. If institutional leaders are ultimately trying to optimize the scope of their athletics enterprises with an appropriate revenue base, then institutional subsidies are one of many revenue levers for which they may make decisions. If changes to subsidies are believed to drive changes in any of the independent variables, specifically the success variable, in the two-way fixed effects model, then the loop of causality presents an endogeneity issue.

One way to address the endogeneity issue is through an instrumental variables approach. While instrumental variables can be difficult to find, they have been used in higher education research. Cellini (2008) discusses instrumental variables as one of the strategies to dealing with

[6] Exploratory models were also run with the individual components of subsidies (i.e., student fees, direct institutional aid, and indirect facilities and administrative support) used as dependent variables. No consistent, significant results were found for these exploratory models. This is not necessarily surprising given that institutions likely use the different components differently, and in some cases, may simply label the institutional subsidy differently. While 97% of the sample reported an overall institutional subsidy to athletics in 2012, only 62% reported providing indirect facilities and administrative support.

endogeneity in the higher education literature. Likewise, instrumental variables have been used in studies of several higher education topics, including tuition (Hoxby, 1997), research output (Payne, 2002; Payne & Siow, 2003), higher education and economic growth (Aghion, Boustan, Hoxby, & Vandenbussche, 2009), and federal earmarks to higher education (Delaney, 2013). There is at least one example of an instrumental variables approach being used in the study of college athletics. Anderson (2012) used propensity score matching and instrumental variables to analyze the effects of athletics success on academic outcomes and donations.

To implemental this approach, one or more instrumental variables are needed that are correlated with the endogenous independent variable of interest, but uncorrelated with unobserved factors. Strength of schedule (SOS) and points per game (PPG) were chosen as instrumental variables. In order to be valid instruments, SOS and PPG need to be predictive of winning and only related to subsidies through winning. SOS is a measure of a team's opponents' quality, which should be predictive of the team's success (wins) against those opponents. All other things being equal, I would expect that a weaker strength of schedule would result in more wins, for example. Likewise, PPG is a measure of a team's offensive production and I would expect that the ability to score points would be predictive of winning. At the same time, there is no clear relationship between these two instruments (SOS and PPG) and the dependent variable (institutional subsidies) except through the success variable. In fact, these two statistics do not receive much attention outside of sports circles and there is no evidence that college administrators use them in any decision making. Furthermore, it is difficult to imagine how these two variables could be related to subsidies except through winning. Points per game are somewhat random and no systematic differences are evident across any baseline characteristics (e.g., teams from northern states are not known to score more or less than teams from southern

states). Since SOS is, in part, affected by an institution's conference affiliation (teams play a large number of games against conference opponents), perhaps SOS could be related to subsidies through conference affiliation. Even if this was the case, conference effects may be expected to be conditioned out by other covariates in the model, like ticket sales and number of sponsored sports, for example. In other words, SOS and PPG are believed to represent valid instruments because they are only related to institutional subsidies through the measure of wins.[7]

Fortunately, because the instrumental variables models in this study all utilize more than one instrumental variable predicting one endogenous variable, I can test overidentification restrictions, which are the number of extra instrumental variables. The Sargan test, sometimes also referred to as the Hansen test or Sargan-Hansen test, effectively tests whether one or more instrumental variables are correlated with the error, violating the assumption. The Sargan statistics are presented in the results tables. The null hypothesis is that the instrumental variables are uncorrelated with the error term, so rejection of the null, signified by significance in the Sargan statistic, would suggest that at least one of the instruments is correlated with the error term and provide evidence of bias.

In addition to being valid instruments, the instruments need to be relevant. "Weak" instruments can produce biased estimates, even if they are valid. Staiger and Stock (1997) proposed a simple test for weak instruments. Their rule of thumb stated that weak instruments

[7] Appendix B presents a correlation table for the four instrumental variables and the first-stage regression results. These tables provide evidence that these instrumental variables are generally not highly correlated and, thus, contribute uniquely to the models. The basketball and football strength of schedule variables do show high correlation in Table B1, which likely explains why only one of these two variables is significant in the first-stage regression models in Table B4, when a composite measure of football and men's basketball winning percentage is being analyzed. The other instrumental variables in these models – basketball and football points per game – are both consistently significant. As a robustness check, the combined winning percentage models were run with only three instrumental variables, excluding one of the SOS instrumental variables, and the results did not change significantly from those shown in Table 2.12.

result in a first stage F statistic of less than 10. The first stage F statistic essentially tests whether the instruments are relevant to the first stage regression. Cragg and Donald (1993) developed a test for weak instruments that is particularly useful when there is more than one endogenous regressor. Stock and Yogo (2005) contributed critical values for the Cragg-Donald Wald F statistic to test whether a given group of instruments is weak or strong. Both the first stage F statistic rule of thumb and the Cragg-Donald test are used in the instrumental variables approach to determine the strength of the instruments.

The instrumental variables approach will be implemented as a two-stage least squares regression. The first stage will predict the number of wins or winning percentage, W_{it}, as a function the instruments of SOS and PPG, vector **Z**, and a vector of other independent variables, $\mathbf{X}_{it}$. $\mathbf{X}_{it}$ includes the same set of variables as equation 2.1. In addition, the first stage model includes a constant, δ_0, and an error term, ε_W. The first stage is represented in equation 2.2:

$$W_{it} = \delta_0 + \delta_1 \mathbf{Z}_{it} + \mathbf{X}_{it} + \varepsilon_W \qquad (2.2)$$

The second stage, then, uses the predicted value of W_{it} to predict the level of institutional subsidy:

$$Y_{i(t+1)} = \beta(Z_{it}'W_{it}) + \gamma \mathbf{X}_{it} + \alpha_i + \lambda_t + \varepsilon_Y \qquad (2.3)$$

Where $Y_{i(t+1)}$ is the amount of the total subsidy at institution, *i*, in year, *t + 1*; α is the institution effect; λ_t is the year effect; W_{it} is the predicted value for the measure of wins; β is the coefficient of interest, $\mathbf{X}_{it}$ is a matrix of independent variables; γ is scalar of regression coefficients; and ε_Y is the error term.

Table 2.2 presents descriptive statistics for the variables used in the panel regressions and instrumental variables approach.[8] After accounting for missing values, there are a total of 1,492

[8] The descriptive statistics in Table 2.2 are for the estimating sample; because the outcome variable in the estimating sample is total subsidy for year, *t + 1*, the descriptive statistics do not include the total subsidy in year, *t*.

observations across 227 institutions. When the sample is restricted to only football-participating institutions, there are 1,183 observations across 179 institutions.

The average CPI-adjusted athletic subsidy was $8.7 million, with a range of $0 to $29.1 million. Ten institutions reported no subsidies for at least one year of the dataset: Louisiana State University (LSU), Ohio State University, Pennsylvania State University, Purdue University, Texas A&M University, University of Nebraska, University of Oklahoma, University of Oregon, University of Texas, and Youngstown State University. Three of these institutions reported no subsidies in each of the seven years: LSU, Nebraska, and Ohio State. The largest single-year, CPI-adjusted subsidy was reported by the University of Delaware in 2011 ($29.1 million).

Descriptive statistics for the independent variables of interest are also presented in Table 2.2. The number of basketball wins averaged 16.5 in the sample, and ranged from 2 (5 institutions) to 38 (Kentucky in 2012 and Memphis in 2008). The number of football wins averaged 6.1, and ranged from 0 (19 institutions) to 14 (6 institutions).[9] The average combined winning percentage for basketball and football was 51.7%, and ranged from 4.9% (Savannah State University in 2006) to 92.5% (University of Kansas in 2008).

Tables 2.3, 2.4, 2.5, and 2.6 present descriptive statistics for the subgroups that are used in analyses: BCS-only institutions, non-BCS institutions, FBS institutions, and FCS institutions respectively. By comparing the descriptive statistics for these subgroups, one can see that there are significant differences across these groups in terms of institutional size (measured by average enrollments and average institutional revenue) and scope of athletics enterprise (measured by the number of sponsored sports and average ticket sales revenue). The differences in the average

[9] The original sample included a football points per game value of 403 for Morgan State University in 2005. This is an obvious error and was treated as a missing value in the analyses.

subsidy are less obvious. While the BCS-only group has a lower average subsidy than the non-BCS group ($5.7 million vs $9.7 million), the average subsidies in the FBS and FCS groups are very similar, $8.8 million and $8.9 million, respectively. Understanding differences across these subgroups may help explain the findings.

Results

The results for this analysis are presented in the following three sections. The first section focuses on the models analyzing the effects of basketball success, while the second section focuses on football success. The third section considers both basketball and football success simultaneously by using a composite measure of success. Each of these sections includes discussion of the results of both panel analyses and instrumental variables analyses.

Basketball Success and Athletic Subsidies

Table 2.7 shows panel regression results for basketball-only models, and the dependent variable is a lead value of subsidies, or the subsidy the year following the predictor variables. While it is possible that current year performance could impact current year subsidies, especially in the case of indirect institutional support, it is more likely that current year performance will impact next year's subsidy decisions. Furthermore, using a lead value of subsidy eliminates the possibility of finding an effect that precedes the treatment.

Column 1 of Table 2.7 shows the results of the model when run with all institutions in the sample. In this model, the number of basketball wins does not have a significant relationship with the level of subsidy. However, Column 2 shows the results when the sample is limited to BCS conference basketball programs. For these "big-time" basketball institutions, the coefficient for basketball wins is statistically significant. The magnitude of effect implies that each additional win is associated with an increase of $32,373, or 0.37% of the average subsidy

across all years, in institutional support for athletics. Column 3 shows the results for non-BCS conference basketball programs. Basketball wins is not significantly related to subsidies for these institutions.

The results for the control variables across the different models presented in Table 2.7 provide an interesting finding. It appears that the controls have different relationships with subsidies across BCS conference and non-BCS conference institutions. Some of these differences are consistent throughout many of the results tables. For example, ticket sales consistently have a significant negative relationship with subsidies for BCS conference institutions, but no significant relationship for non-BCS conference institutions. Conversely, enrollments appear to have a more consistent, significant relationship with subsidies for non-BCS conference institutions than for BCS conference institutions. These differences may be, in part, explained by the differences highlighted in the descriptive statistics for these subgroups. The large differences in average ticket sales revenue, for example, provide evidence that BCS institutions rely on ticket sales more than non-BCS institutions. It seems reasonable, then, to expect ticket sales to be more predictive of subsidy decisions at BCS institutions than non-BCS institutions. Generally speaking, this may suggest that the primary drivers of subsidy decisions are different at institutions from the two groups.

Table 2.8 displays the results of the instrumental variables approach with the independent variable of interest still being basketball wins. In each of these models, two instrumental variables are used: basketball strength-of-schedule and basketball points per game. Basketball wins have a significant, positive effect in the full model that includes all institutions ($p<0.05$) and the BCS-only model ($p<0.01$). No significant effect is found for the non-BCS model. The magnitude of effect for the full model suggests that each additional basketball win is associated

with an increase in subsidy of $38,083, or 0.44%. This is similar to the effect size found in the panel regression analysis for BCS-only institutions. The magnitude of effect in the IV BCS-only model, however, is much larger, indicating that each additional basketball win is associated with an increase of $104,163, or 1.19% on average, in subsidy. The Sargan statistic in each model is not significant, meaning that the null of the instruments being uncorrelated with the error term is not rejected. The first stage F statistics for each of the basketball models in Table 2.8 are much greater than ten, and the Cragg-Donald Wald F statistics are all greater than the Stock and Yogo critical values. These results suggest that the instruments for the number of basketball wins are valid and not weak.

Football Success and Athletic Subsidies

Football success is also commonly used in the literature as a proxy for athletics success. Table 2.9 presents the results of the same panel regression model as Table 2.7, but with measures of football success replacing the measures of basketball success. Because teams from the two NCAA Division I football subdivisions potentially play different numbers of games, football winning percentage is used as the independent variable of interest in the full model (column 1). When the FBS and FCS subdivisions are considered separately (Columns 2 and 3), the absolute number of football wins is an acceptable independent variable, and is preferred since analysis of wins is more intuitive than winning percentage. It should be noted that the full model using football variables does not include the same institutions as the full model when using basketball variables since not all NCAA Division I institutions participate in football. Table 2.9 shows that the football independent variable was not statistically related to subsidies in any of the models. This is somewhat contradictory to the basketball results, where there was some evidence of a positive effect of winning on subsidy levels.

The instrumental variables approach was also employed with the football models. Here, both football strength-of-schedule and football points per game serve as instruments for the measures of football success (i.e., football winning percentage or number football wins). The results for these analyses are presented in Table 2.10. In the full, FBS, and FCS models, the measure of football success is not found to have a significant effect on the level of athletic subsidy. Again, this contradicts the basketball results and suggests that subsidy decisions may be impacted differently by different types of athletic success. Even though no significant effect was found, the first stage F statistics were much greater than ten for all three models and the Cragg-Donald Wald F statistics were greater than the Stock and Yogo (2005) critical values. Furthermore, the Sargan statistics were not significant. This suggests that, despite not finding significant results, the football instruments were still valid and strong.

Basketball and Football Models

Table 2.11 shows the results of the panel regression model when the independent variable is a composite measure of basketball and football winning percentage (i.e., basketball wins + football wins / total number of basketball and football games played). The rationale behind the joint model is that perhaps institutional leaders factor in performance in both sports when considering subsidy decisions. All Division I programs participate in basketball, but not all participate in football; therefore the sample for this joint analysis is limited to institutions participating in football, similar to Tables 2.9 and 2.10.

In the full model (Column 1), no significant relationship is found between combined basketball and football winning percentage and subsidies. Similarly, no significant relation is found when the model is run on the subgroups of football subdivision, FBS (Column 2) and FCS (Column 3). However, when disaggregating the sample into the BCS-only (Column 4) and non-

BCS (Column 5) groups that were used in the basketball analyses, a positive, significant effect ($p<0.1$) is found for combined winning percentage, but only for the BCS-only model. This aligns with the basketball-only results (Table 2.7), which may have been expected given the similarities of the samples. In fact, the samples are identical. A small number of institutions in the BCS conferences do not participate in football; however, since the data does not include any of these institutions, restricting to BCS-only institutions results in identical samples for the football and basketball analyses. The magnitude of the effect for BCS institutions suggests that each percentage increase in combined winning percentage is associated with an $18,128, or 0.31% on average, increase in subsidies. A back of the envelope calculation can be used to convert this into terms of the effect per additional win. Assuming that the total number of basketball and football games is around 50 games, each additional win changes the winning percentage by 2%. So the change in subsidy for each percentage increase in winning percentage can roughly be doubled to estimate the change in subsidy for each additional win. Here, this suggests that each additional basketball or football game is associated with approximately $36, 000, which is in line with the basketball-only result (Table 2.7).

Table 2.12 displays the results for the instrumental variables approach using the composite winning percentage variable. All four instrumental variables – basketball PPG, basketball SOS, football PPG, and football SOS – were used. A positive, significant effect was found for the full ($p<0.01$), FBS ($p<0.05$), FCS ($p<0.1$), BCS ($p<0.01$), and non-BCS ($p<0.1$) models. The magnitude of effects ranged from $18,397 to $47,491, or 0.19% to 0.82% on average, increase in subsidy for every 1% increase in combined winning percentage. Conducting a back of the envelope estimation again and assuming approximately 50 total games, these results suggest an approximate $40,000 to $95,000 increase in subsidy for each additional

basketball or football win. In each of these models, the first-stage F statistics is much greater than ten; the Cragg-Donald Wald F statistics are all greater than Stock and Yogo (2005) critical values; and the Sargan statistics are not significant, providing further evidence of the instrumental variables being both valid and strong.

Discussion of Results and Limitations

There are several takeaways from the results of the various models. The most basic finding is that there is some evidence that performance affects institutional subsidies to athletics, and in all cases, this evidence points to a positive effect. I only found evidence of basketball success and basketball and football composite success impacting subsidy decisions. No evidence was found of football success individually influencing subsidy decisions. This is somewhat surprising and there is no clear explanation as to why institutional leaders would consider one sport's success over the other. The sports are played in different seasons and perhaps the timing of subsidy decisions coincides with basketball season at many institutions. It may also be a result of truly differential effects across the two sports. Curs, Harper, and Frey (2012) failed to find any evidence of an effect of football success, measured by bowl game participation, on academic success, athletic revenues, applications, or enrollments, so perhaps football success is simply less impactful on some outcomes than basketball success.

The strongest and most consistent effect of basketball success was found at institutions participating in big-time (BCS conference) college athletics. Based on the differences in size and scope highlighted in the descriptive statistics, it was not surprising to find different results across subgroups of institutions. Athletics likely play very different roles within institutions from these subgroups. The strength and consistency of the findings for big-time college athletics may also be explained by the high visibility of sports at these institutions; information and

feedback on the team's success is likely more readily available at these institutions. This may provide insight into how performance may affect different types of higher education subsidies where feedback and data is even more obscure.

This study adds to the understanding of the relationship between athletics and their higher education institutions, specifically the financial relationship. Just as previous literature has suggested that athletics success may impact an institution's applications, student profile, and fundraising efforts, the results from this study provide evidence that athletics success may also influence institutional budgeting decisions. This study also adds to the emerging body of literature that specifically looks at athletic subsidies and offers a unique contribution in its use of quasi-experimental research methods. One contribution of this study is the identification and successful implementation of instrumental variables in the study of the effects of athletics success. These particular instruments, which were argued to satisfy the necessary criteria for valid instruments, and were shown to be consistently strong and pass overidentification tests in this study, may prove beneficial in future studies. This study also contributes to the understanding of subsidization in higher education in general. As such, this research may have implications for institutional leaders, athletic directors, reformers, and other researchers.

There are some limitations to this study. The dataset is the source of at least two possible limitations. The dataset is restricted to public institutions since these are the only institutions required to respond to the USA Today FOIA requests. As a result, one of the limitations of this study is that the results cannot be generalized to private institutions. In addition, the study focuses exclusively on Division I institutions. The significant differences between NCAA divisions preclude any generalizations to Division II or Division III athletics from this study's findings.

Data quality may represent another limitation of the study. The financial data is unaudited and self-reported by the institutions. It may be the case that certain expenditures, like indirect facilities and maintenance support, are not accounted for uniformly across the sample. This would introduce bias into the sample, and it is not possible to estimate whether the potential bias would tend to skew results in a particular direction. However, for this type of financial data, the USA Today database used in this study represents the best data available at this time.

Despite these limitations, this study makes a unique contribution to the literature and provides useful insights into the research question. Athletics success appears to have a positive effect on subsidy levels, but this effect may vary by sport and by institutional type. There is still plenty of research potential on the topic of institutional subsidies to athletics. This study was limited by the available data, but it would certainly be worthwhile to conduct a similar study with the full sample of NCAA Division I institutions, not just public institutions, if this data can be obtained from the NCAA. Considering some of the recent changes and ongoing debates in college athletics (e.g., television networks, conference realignments, paying athletes), future studies may also consider the effects that these changes have on the subsidies. Subsidies, for example, may be particularly important to the debate of paying athletes as institutional leaders may assume that increasing costs will require higher levels of subsidies. An analysis of the different types of subsidies is another logical extension of this study. For the reasons mentioned previously, this analysis may require different methods. Perhaps a longitudinal study at select institutions would be most appropriate to determine how these individual components are affected by athletics success. Ideally, this study could also inform future research on different types of higher education subsidies (i.e., nonathletic). While athletics offer a convenient example of a subsidy where performance data is readily available, future work may attempt to

study how other university subsidized activities are affected by performance. Hopefully, the present study will prove beneficial to this future research.

Table 2.1: Model Variables, Descriptions, and Data Sources: Essay 2

Variable Name	Variable Long Name	Variable Description	Source Code
subsidy	Total Athletic Subsidy	The sum of subsidy variable components: direct institutional aid, student fees, and indirect facilities and administrative support.	1
bball_w	Basketball Wins	The number of basketball wins during the season.	2
fball_w	Football Wins	The number of football wins during the season.	2
ncaa_fb_pct	Football Winning Percentage	The number of football wins divided by the total number of games played (wins and losses combined)	2
bb_fb_pct	Combined Winning Percentage	The total number of basketball and football wins divided by the total number of games played in both sports	2
sportcou	Sport count	The number of sponsored sports at the institution during the year.	3
enrollme	FTE Enrollment	FTE enrollment during the fall of the academic year.	4
inst_rev	Institutional Revenue	Institutional revenue	4
tickets	Ticket Sales Revenue	Revenue generated from ticket sales to athletic contests.	1
bball_ppg	Basketball Points Per Game	Points scored per basketball game during the season.	2
fball_ppg	Football Points Per Game	Points scored per football game during the season.	2
bb_sos	Basketball Strength of Schedule	Strength of schedule for the basketball season.	5
fb_sos	Football Strength of Schedule	Strength of schedule for the football season.	5
CPI	Consumer Price Index	Consumer price index, all urban consumers (CPI-U), all items.	6

Table 2.1 (continued)

Source Code	*Variable Source*	*URL*
1	USA Today Athletics Finance Database	http://usatoday30.usatoday.com/sports/college/story/2012-05-14/ncaa-college-athletics-finances-database/54955804/1
2	NCAA	
	Men's Basketball	http://web1.ncaa.org/stats/StatsSrv/ranksummary?sportCode=MBB
	Football	http://web1.ncaa.org/stats/StatsSrv/rankings?doWhat=archive&sportCode=MFB
3	Equity in Athletics Data Analysis Cutting Tool	http://ope.ed.gov/athletics/
4	Integrated Postsecondary Education Data System (IPEDS)	http://nces.ed.gov/ipeds/
5	Jeff Sagarin Ratings	
	Men's Basketball	http://www.usatoday.com/sports/ncaab/sagarin/
	Football	http://www.usatoday.com/sports/ncaaf/sagarin/
6	US Department of Labor, Bureau of Labor Statistics	http://www.bls.gov/cpi/

Table 2.2: Descriptive Statistics: Essay 2, All Institutions

VARIABLES	Observations	Mean	Std. Dev.	Min.	Max.
$Subsidy_{t+1}$ (CPI-adj)	1,492	$8,743,728	$5,386,580	$0	$29,100,000
Sport count	1,492	14.86	3.32	6.00	34.00
Enrollment	1,492	17,800.02	10,246.14	1,362.00	61,907.00
Institutional rev. (CPI-adj)	1,492	$724,000,000	$860,000,000	$55,100,000	$6,930,000,000
Ticket sales (CPI-adj.)	1,492	$5,899,966	$9,689,270	$58.96	$62,500,000
Basketball wins	1,492	16.46	6.45	2.00	38.00
Basketball PPG*	1,492	69.26	5.76	54.20	100.90
Basketball SOS†	1,492	72.89	4.23	61.48	82.42
Football wins	1,182	6.11	2.94	0	14.00
Football winning pct.	1,182	50.20%	21.81%	0%	100%
Football PPG*	1,182	26.17	7.02	7.45	51.14
Football SOS†	1,182	60.86	12.39	25.15	82.65
Combined winning pct.	1,182	51.70%	14.45%	4.88%	92.45%
Number of institutions	227				
Obs. per Institution: Min	1				
Obs. per Institution: Avg	6.57				
Obs. per Institution: Max	7				

* PPG = points per game.

† SOS = strength of schedule.

Table 2.3: Descriptive Statistics: Essay 2, BCS-only Institutions

VARIABLES	Observations	Mean	Std. Dev.	Min.	Max.
$Subsidy_{t+1}$ (CPI-adj)	370	$5,762,542	$5,366,734	$0	$29,100,000
Sport count	370	17.67	3.66	12.00	34.00
Enrollment	370	29,189.07	9,537.67	13,418.00	61,907.00
Institutional rev. (CPI-adj)	370	$1,640,000,000	$1,140,000,000	$371,000,000	$6,930,000,000
Ticket sales (CPI-adj.)	370	$20,100,000	$9,983,596	$4,349,168.00	$62,500,000
Basketball wins	370	20.18	6.27	6.00	37.00
Basketball PPG*	370	71.33	5.66	55.90	89.80
Basketball SOS†	370	78.28	1.65	73.49	82.42
Football wins	370	7.32	2.74	0	14.00
Football winning pct.	370	57.74%	19.62%	0%	100%
Football PPG*	370	27.93	6.68	12.00	51.14
Football SOS†	370	73.61	2.90	65.37	82.65
Combined winning pct.	370	59.71%	12.12%	20.93%	92.45%
Number of institutions	54				
Obs. per Institution: Min	2				
Obs. per Institution: Avg	6.85				
Obs. per Institution: Max	7				

* PPG = points per game.

† SOS = strength of schedule.

Table 2.4: Descriptive Statistics: Essay 2, Non-BCS Institutions

VARIABLES	Observations	Mean	Std. Dev.	Min.	Max.
$Subsidy_{t+1}$ (CPI-adj)	1,122	$9,726,828	$5,021,016	$0	$29,100,000
Sport count	1,122	13.93	2.61	6.00	24.00
Enrollment	1,122	14,044.27	7,263.61	1,362.00	46,122.00
Institutional rev. (CPI-adj)	1,122	$422,000,000	$434,000,000	$55,100,000	$3,380,000,000
Ticket sales (CPI-adj.)	1,122	$1,211,356	$1,826,321	$58.96	$15,000,000
Basketball wins	1,122	15.23	6.03	2.00	38.00
Basketball PPG*	1,122	68.57	5.63	54.20	100.90
Basketball SOS†	1,122	71.11	3.19	61.48	79.49
Football wins	812	5.55	2.86	0	14.00
Football winning pct.	812	46.77%	21.91%	0%	100%
Football PPG*	812	25.37	7.03	7.45	49.75
Football SOS†	812	55.05	10.57	25.15	75.12
Combined winning pct.	812	48.05%	13.96%	4.88%	88.00%
Number of institutions	176				
Obs. per Institution: Min	1				
Obs. per Institution: Avg	6.38				
Obs. per Institution: Max	7				

* PPG = points per game.

† SOS = strength of schedule.

Table 2.5: Descriptive Statistics: Essay 2, FBS Institutions

VARIABLES	Observations	Mean	Std. Dev.	Min.	Max.
$Subsidy_{t+1}$ (CPI-adj)	678	$8,834,041	$6,239,550	$0	$29,100,000
Sport count	678	16.23	3.41	11.00	34.00
Enrollment	678	24,502.00	9,753.14	4,183.00	61,907.00
Institutional rev. (CPI-adj)	678	$1,170,000,000	$1,040,000,000	$125,000,000	$6,930,000,000
Ticket sales (CPI-adj.)	678	$12,200,000	$11,500,000	$129,049.60	$62,500,000
Basketball wins	678	18.67	6.53	3.00	38.00
Basketball PPG*	678	70.51	5.45	54.20	89.80
Basketball SOS†	678	75.98	3.20	64.78	82.42
Football wins	678	6.49	2.93	0	14.00
Football winning pct.	678	51.57%	21.45%	0%	100%
Football PPG*	678	26.89	7.03	9.58	51.14
Football SOS†	678	69.72	5.37	54.08	82.65
Combined winning pct.	678	55.45%	13.68%	13.16%	92.45%
Number of institutions	99				
Obs. per Institution: Min	1				
Obs. per Institution: Avg	6.85				
Obs. per Institution: Max	7				

* PPG = points per game.

† SOS = strength of schedule.

Table 2.6: Descriptive Statistics: Essay 2, FCS Institutions

VARIABLES	Observations	Mean	Std. Dev.	Min.	Max.
$Subsidy_{t+1}$ (CPI-adj)	505	$8,910,412	$5,100,560	$0	$29,100,000
Sport count	505	13.88	2.78	9.00	24.00
Enrollment	505	10,965.91	5,724.69	1,362.00	30,627.00
Institutional rev. (CPI-adj)	505	$309,000,000	$359,000,000	$55,100,000	$3,380,000,000
Ticket sales (CPI-adj.)	505	$775,794	$832,876	$29,914.52	$5,389,378
Basketball wins	505	14.19	5.60	2.00	31.00
Basketball PPG*	505	67.93	6.00	54.80	100.90
Basketball SOS†	505	69.87	3.29	61.48	79.49
Football wins	504	5.60	2.87	0	14.00
Football winning pct.	504	48.37%	22.18%	0%	100%
Football PPG*	504	25.21	6.90	7.45	47.00
Football SOS†	504	48.94	8.57	25.15	66.56
Combined winning pct.	504	46.65%	13.93%	4.88%	81.25%
Number of institutions	82				
Obs. per Institution: Min	1				
Obs. per Institution: Avg	6.16				
Obs. per Institution: Max	7				

* PPG = points per game.

† SOS = strength of schedule.

Table 2.7: Panel Regression Using Basketball Success

VARIABLES	(1) Full Model $Subsidy_{t+1}$ (CPI adj.)	(2) BCS-Only $Subsidy_{t+1}$ (CPI adj.)	(3) Non-BCS $Subsidy_{t+1}$ (CPI adj.)
Basketball wins	11,242	32,373*	3,610
	(9,531)	(19,148)	(11,505)
Enrollment	84.12	-309,100*	169,894**
	(116.8)	(177,932)	(74,693)
Sport count	100,941	-72.33	300.6***
	(80,403)	(90.37)	(100.8)
Institutional rev. (CPI-adj)	-0.000610	-1.50e-05	0.000325
	(0.000462)	(0.000285)	(0.00209)
Ticket sales (CPI-adj.)	-0.214***	-0.108*	0.123
	(0.0449)	(0.0549)	(0.187)
Constant	8.565e+06***	1.430e+07***	4.110e+06**
	(2.358e+06)	(3.749e+06)	(2.037e+06)
Fixed Effects	YES	YES	YES
Year Effects	YES	YES	YES
Observations	1,492	370	1,122
Number of institutions	227	54	176
R-squared	0.279	0.066	0.402

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2.8: IV Approach, Basketball Wins Instrumented on SOS and PPG

VARIABLES	(1) Full Model Subsidy$_{t+1}$ (CPI adj.)	(2) BCS-Only Subsidy$_{t+1}$ (CPI adj.)	(3) Non-BCS Subsidy$_{t+1}$ (CPI adj.)
Basketball wins	38,083**	104,163***	11,819
	(17,409)	(32,946)	(19,748)
Enrollment	103,664**	-290,168**	170,730***
	(50,799)	(122,794)	(53,011)
Sport count	82.53*	-89.67	300.7***
	(45.85)	(69.12)	(64.90)
Institutional rev. (CPI-adj)	-0.000599*	-6.92e-05	0.000387
	(0.000361)	(0.000426)	(0.00102)
Ticket sales (CPI-adj.)	-0.216***	-0.116***	0.118
	(0.0331)	(0.0424)	(0.133)
Fixed Effects	YES	YES	YES
Year Effects	YES	YES	YES
First-stage F	296.84***	82.90***	206.38***
Cragg-Donald Wald F	293.77	80.49	207.29
Sargan statistic	0.111	0.946	0.003
Observations	1,490	370	1,117
Number of institutions	225	54	171
R-squared	0.275	0.025	0.401

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.9: Panel Regression Using Football Success

VARIABLES	(1) Full Model Subsidy$_{t+1}$ (CPI adj.)	(2) FBS Subsidy$_{t+1}$ (CPI adj.)	(3) FCS Subsidy$_{t+1}$ (CPI adj.)
Football winning pct (*100)	800.6		
	(3,941)		
Football wins		21,505	-23,817
		(45,712)	(33,897)
Enrollment	42,729	3,902	44,380
	(91,722)	(188,567)	(87,037)
Sport count	20.65	-61.65	334.3
	(110.5)	(99.49)	(219.5)
Institutional rev. (CPI-adj)	-0.000602	-0.000654	-0.00237
	(0.000473)	(0.000509)	(0.00209)
Ticket sales (CPI-adj.)	-0.212***	-0.231***	0.0137
	(0.0463)	(0.0520)	(0.352)
Constant	1.114e+07***	1.203e+07***	4.311e+06
	(2.382e+06)	(3.335e+06)	(2.883e+06)
Fixed Effects	YES	YES	YES
Year Effects	YES	YES	YES
Observations	1,183	678	505
Number of institutions	179	99	82
R-squared	0.247	0.214	0.360

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.10: IV Approach, Football Wins Instrumented on SOS and PPG

	(1) Full Model	(2) FBS	(3) FCS
VARIABLES	$Subsidy_{t+1}$ (CPI adj.)	$Subsidy_{t+1}$ (CPI adj.)	$Subsidy_{t+1}$ (CPI adj.)
Football winning pct (*100)	5,735		
	(4,986)		
Football wins		47,483	22,490
		(55,183)	(49,636)
Enrollment	42,765	4,965	41,240
	(59,654)	(113,713)	(56,192)
Sport count	22.77	-60.38	344.4***
	(51.32)	(65.18)	(103.7)
Institutional rev. (CPI-adj)	-0.000618	-0.000666	-0.00238
	(0.000380)	(0.000450)	(0.00161)
Ticket sales (CPI-adj.)	-0.215***	-0.234***	-0.0633
	(0.0351)	(0.0425)	(0.299)
Fixed Effects	YES	YES	YES
Year Effects	YES	YES	YES
First-stage F	359.94***	222.37***	105.63***
Cragg-Donald Wald F	337.44	199.00	100.10
Sargan statistic	0.144	1.454	1.147
Observations	1,177	677	499
Number of institutions	174	98	77
R-squared	0.245	0.213	0.355

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.11: Panel Regression Using Basketball and Football Success

	(1) Full Model	(2) FBS	(3) FCS	(4) BCS-Only	(5) Non-BCS
VARIABLES	$Subsidy_{t+1}$ (CPI adj.)	$Subsidy_{t+1}$ (CPI adj.)	$Subsidy_{t+1}$ (CPI adj.)	$Subsidy_{t+1}$ (CPI adj.)	$Subsidy_{t+1}$ (CPI adj.)
Combined winning pct (*100)	7,092	7,744	7,066	18,128*	2,211
	(4,955)	(8,134)	(5,923)	(9,894)	(6,136)
Enrollment	43,750	2,086	44,839	-309,523*	150,308
	(91,100)	(188,001)	(85,085)	(178,138)	(92,152)
Sport count	20.63	-62.31	337.1	-69.64	294.6**
	(110.8)	(101.3)	(218.2)	(89.16)	(120.6)
Institutional rev. (CPI-adj)	-0.000595	-0.000642	-0.00237	-2.69e-05	-0.000159
	(0.000461)	(0.000502)	(0.00220)	(0.000284)	(0.00238)
Ticket sales (CPI-adj.)	-0.214***	-0.232***	-0.0576	-0.111**	-0.0135
	(0.0463)	(0.0516)	(0.358)	(0.0553)	(0.196)
Constant	1.080e+07***	1.507e+07***	3.875e+06	1.385e+07***	5.432e+06**
	(2.435e+06)	(3.414e+06)	(2.936e+06)	(3.795e+06)	(2.458e+06)
Fixed Effects	YES	YES	YES	YES	YES
Year Effects	YES	YES	YES	YES	YES
Observations	1,183	678	505	370	813
Number of institutions	179	99	82	54	128
R-squared	0.249	0.215	0.361	0.067	0.381

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2.12: IV Approach, Basketball and Football Wins Instrumented on SOS and PPG

	(1)	(2)	(3)	(4)	(5)
	Full	FBS	FCS	BCS-Only	Non-BCS
	$Subsidy_{t+1}$	$Subsidy_{t+1}$	$Subsidy_{t+1}$	$Subsidy_{t+1}$	$Subsidy_{t+1}$
VARIABLES	(CPI adj.)	(CPI adj.)	(CPI adj.)	(CPI adj.)	(CPI adj.)
Combined winning pct (*100)	29,322***	32,256**	18,397*	47,491***	18,894*
	(8,711)	(12,678)	(10,204)	(16,169)	(9,889)
Enrollment	46,994	-876.9	47,860	-296,380**	152,240**
	(60,089)	(114,463)	(56,216)	(121,585)	(65,484)
Sport count	21.57	-61.06	334.5***	-77.96	299.3***
	(51.64)	(65.56)	(103.3)	(68.18)	(83.66)
Institutional rev. (CPI-adj)	-0.000579	-0.000635	-0.00236	-8.58e-05	0.000158
	(0.000382)	(0.000452)	(0.00161)	(0.000423)	(0.00117)
Ticket sales (CPI-adj.)	-0.219***	-0.240***	-0.107	-0.121***	-0.0543
	(0.0353)	(0.0427)	(0.291)	(0.0423)	(0.149)
Fixed Effects	YES	YES	YES	YES	YES
Year Effects	YES	YES	YES	YES	YES
First-stage F	139.47***	106.34***	44.44***	50.82***	87.81***
Cragg-Donald Wald F	135.46	102.20	42.96	49.27	85.88
Sargan statistic	0.763	4.196	3.193	4.082	2.546
Observations	1177	677	499	370	804
Number of institutions	174	98	77	54	120
R-squared	0.234	0.203	0.354	0.042	0.373

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

ESSAY 3

THE EFFECTS OF MAKING THE NCAA MEN'S BASKETBALL TOURNAMENT ON BASKETBALL, ATHLETIC, AND INSTITUTIONAL REVENUES

The NCAA men's basketball tournament – affectionately known as March Madness – is one of the biggest sporting events of the year. All season long, teams across the country vie for one of the coveted 68 slots in the field. 31 of the 68 slots are reserved for the winners of each of the conference tournaments.[10] The remaining 37 "at-large" bids are awarded to teams by a selection committee that is typically comprised of ten athletic directors and conference commissioners. The selection process is secretive, but a combination of factors are believed to be used, such as total number of wins throughout the season, strength of schedule, and "signature wins" against top opponents. The process culminates in "Selection Sunday," when the tournament brackets and first-round matchups are revealed live on television.

The drama of Selection Sunday is most intense for the so-called "bubble teams" that are vying for one of the last at-large bids to participate in the tournament. Making the field of 68 ensures that these teams receive the attention and exposure associated with the prestigious tournament. One might expect that this exposure would have positive effects on these athletic programs and their host institutions. In fact, some research has considered the varied effects of successful athletic programs (e.g., Toma & Cross, 1998, Baade & Sundberg, 1996; Sigelman & Bookheimer, 1983; Humphreys & Mondello, 2007; Humphreys, 2006, Mixon, 1995). The purpose of this study is to consider the specific effects of participating in the NCAA men's basketball tournament on different revenue streams.

[10] The Ivy League does not conduct a postseason conference tournament, so its automatic bid is awarded to the regular season champion.

One of the findings in the analysis of institutional subsidies presented in Essay 2 was that basketball success, in particular, may impact the amount of institutional resources contributed to athletics. In other words, there was suggestive evidence that institutions allocate more resources to athletics based on success. This essay tests this relationship more rigorously. Of course, institutional subsidies are only one of the revenue streams for athletics, and the question remains as to whether athletics success leads to an overall financial effect. To address this question, I evaluate the effects of making the NCAA men's basketball tournament on basketball-specific revenues, total athletic revenues, and institutional revenues.[11]

Research Questions and Hypotheses

This study addresses the following three research questions:

1. What is the effect of making the NCAA men's basketball tournament on basketball revenues?
2. What is the effect of making the NCAA men's basketball tournament on total athletic revenues?
3. What is the effect of making the NCAA men's basketball tournament on total university revenues?

The key distinction between these questions is, of course, the type of revenue being evaluated. The first question specifically addresses athletic revenues specifically allocated to an institution's men's basketball program; the second question considers total athletic department revenues, including all ticket sales and athletic donations; and the third research question addresses university revenues, like student tuition.

[11] The men's NCAA basketball tournament is the focus of this study because of its great popularity and large revenue base, but the women's NCAA basketball tournament could be analyzed as a future extension of this study.

Given that teams may receive NCAA and conference payouts for participating in the tournament, I hypothesize that making the tournament will have a positive effect on basketball revenues and total athletic revenues in the tournament year. This could be considered a baseline effect; but another interesting question is whether making the tournament one year has an impact on revenues in a subsequent year. This would be a type of carryover effect that may result from the increased exposure derived from making the tournament. For example, more fans may purchase season tickets after watching their team compete in the NCAA tournament the prior year. In this way, I analyze the significance and magnitude of the same-year effect, as well as the persistence and relative magnitude of any carryover effect in the subsequent year.

The relationship between a school's NCAA tournament appearance and its total institutional revenues is less certain. However, given the advertising effect suggested by Toma and Cross (1998) and others, it may be reasonable to expect institutions to monetize the increased interest resulting from basketball tournament success. One way that they could realize higher revenues would be to enroll more students and collect more tuition revenue, which would be a rational response if applications indeed jump. Obviously, most institutional revenues are already determined by the time of the men's basketball tournament in March, so next-year effects are more interesting than same-year effects on institutional revenues.

Related Literature

Athletics Literature

A fair amount of research has looked at the effects of successful athletic programs. Athletic success is typically operationalized as men's basketball or football success. Toma and Cross (1998) found evidence of the "advertising effect" and suggests that winning the men's basketball national championship has a positive effect on applications. Several studies have

considered financial effects of athletic success. Most of these studies have focused on the effects of success on donations directly to athletic departments and the broader institution (e.g., Baade & Sundberg, 1996; Sigelman & Bookheimer, 1983; Humphreys & Mondello, 2007). The findings from these studies are not always consistent, but they do provide some evidence of a positive relationship between athletics and some form of donations. However, a drawback of this literature is that it does not attempt to make causal inferences.

Anderson (2012) addressed the effects of athletic success on various outcomes, including donations. This study is unique in that it employed quasi-experimental propensity score methods with instrumental variables to estimate causal effects. Anderson used bookmaker spreads to assign probabilities of winning for each team in each game. These probabilities represented his propensity scores for receiving the treatment, which in this case was winning the game. He then conditioned on these probabilities to make causal inferences about winning football games on various outcomes.

> Applying this framework [he] found robust evidence that football success increases athletic donations, increases the number of applicants, lowers a school's acceptance rate, increases enrollment of in-state students, increases the average SAT score of incoming classes, and enhances a school's academic reputation. (p. 3)

Each additional football win increased athletic donations by $136,400, number of applicants by 1%, and the 25th percentile SAT score by 1.8 points.

While Anderson (2012) offers a unique application of quasi-experimental research design in intercollegiate athletic literature, it is not without limitations. Anderson only considers the effects of success in football. It is common in the literature to use football success as a proxy for overall athletic success, but it is, nevertheless, a possible limitation. Anderson's data also only

includes institutions in the NCAA's Football Bowl Subdivision (FBS). This subset of intercollegiate athletics participants, of course, includes the most prominent sports programs. There may very well be differential effects of success across subdivisions. In fact, Anderson's analysis suggests that the success may affect Bowl Championship Series (BCS) teams – those in the top six conferences – differently than non-BCS teams. Anderson's study makes an important contribution by applying an quasi-experimental design to study the effects of athletics success on several outcomes, but this study employs a different quasi-experimental approach with a broader sample, uses a different type of success (basketball instead of football), and considers the effects of success on a different type of outcome variable, namely financial revenues. In short, this study will address the financial effects of athletics success, which was not a focus of Anderson's study.

Regression Discontinuity Literature

There have been several general studies that have applied quasi-experimental designs to higher education topics and some have specifically used regression discontinuity design, which will be utilized in this study. Cook (2008) describes the history of regression discontinuity designs. The design was first developed by Thistlewaite and Campbell (1960), and its popularity has varied by discipline. Despite its early discovery, interest in regression discontinuity did not pick up until after 1990 in education and psychology, and after 1995 in economics (Cook, 2008). The strength of the regression discontinuity design is its ability to produce unbiased estimates of the treatment effect in situations where performing a random experiment are impractical. "The basic idea behind the [regression discontinuity] design is that assignment to the treatment is determined, either completely or partly, by the value of a predictor (the covariate X_i) being on either side of a fixed threshold" (Imbens & Lemieux, 2008, p. 616). By exploiting this

discontinuity in treatment assignment, researchers may make causal inferences, potentially providing much more robust and meaningful findings.

Interestingly, Thistlewaite and Campbell's (1960) original work on regression discontinuity design was in the higher education context. They evaluated the casual effects of public recognition for achievement on college aptitude tests on the likelihood that the recipient will receive and scholarship, the student's attitudes, and the student's career plans. Van der Klaauw (2002) also used a regression discontinuity design in a higher education study evaluating the effects of financial aid offers on student enrollment decisions. The college in his study ranked applicants based on test scores and used quartile cutoffs to determine, in part, the amount of the financial aid offer. Van der Klaauw used the discontinuity in the aid offers around the cutoffs to evaluate the effects of the institution's aid offers on enrollment decisions. Because there were other unobserved factors contributing to the aid offers, this was an application of a fuzzy regression discontinuity design. Additional studies have used regression discontinuity designs to evaluate need-based (Kane, 2003), merit-based (Goodman, 2008), and hybrid (DesJardins, McCall, Ott, & Kim, 2010) financial aid programs. Financial aid programs lend themselves well to regression discontinuity design since they typically involve a threshold (e.g., minimum GPA, maximum income) for award eligibility.

Regression discontinuity design has been subjected to robustness checks by researchers at various times. This typically involves within-study comparisons. Cook, Shadish, and Wong (2008) compared experiments and regression discontinuity studies and found them to produce similar causal estimates near the cut score. Their findings were somewhat surprising since their studies involved complex situations where they admitted that the implementation of the experiment and the regression discontinuity would likely be imperfect. The fact that they

received similar results under these circumstances, led them to conclude that regression discontinuity is a "robustly effective tool" (p. 732).

Data and Methods

Data from for this study came from multiple sources. Table 3.1 presents variable descriptions and source information for all of the data used in this study. The primary source was the Equity in Athletics Disclosure Act (EADA) survey conducted by the U.S. Department of Education. This survey gathers a variety of gender-specific information on institutions' intercollegiate athletic activities. Its purpose is to allow for comparisons of athletic opportunities at institutions and it is mandatory for all institutions that participate in Title IV federal financial aid programs (U.S. Department of Education, n.d.). The mandatory nature of the survey makes it a more comprehensive dataset than other athletics finance data sources that might only include data for a subset of institutions (e.g., the USA Today Athletics Finance Database). However, the finance data elements are somewhat limited. Revenues and expenses are reported by sport and by gender, but not by source or type. This level of detail is sufficient for the present study, but limits the survey's usefulness for studies that call for more detailed accounting information, like the study of institutional subsidies in Essay 2.

In addition to the EADA database, the institutional revenues variable was obtained from the Integrated Postsecondary Education Data System (IPEDS). Data on basketball performance was compiled from Sports Reference, a leading provider of sports information. Unfortunately, I was not able to obtain a preexisting database from Sports Reference, but I did receive permission to but a build a dataset from the information available on their website: http://www.sports-

reference.com/cbb/.[12] Sports Reference data was chosen for this study because it included disaggregated wins totals for the regular season, conference tournament, and any postseason tournaments.[13]

Data in the study is structured as a panel and covers the 12 years that the EADA survey has been conducted: the 2000-01 through 2011-12 academic years and the corresponding 2001 through 2012 NCAA men's basketball tournaments. Table 3.2 shows descriptive statistics for the sample after omitting missing values. The data was also cleaned of data errors. There were 13 negative values for institutional revenues, so these observations were omitted from the analyses. There was also a value for total athletic revenues of $823 million at San Diego State University in 2001. Determining that this value was likely also a data error, this observation was omitted from the base sample. After cleaning, there were 3,515 observations in the base sample. However, there was not an institutional revenue value available in IPEDS for all of these observations, so analyses of institutional revenues are limited to 3,480 observations.[14] Basketball revenues in the sample, CPI-adjusted, averaged just over $3 million, and ranged from $25,400 (Loyola University-Maryland in 2002) to $41.7 million (University of Louisville in 2011). Total athletic revenues, CPI-adjusted, averaged $22.8 million, and ranged from $165,841 (Coppin State University in 2002) and $163 million (University of Texas in 2012). Institutional revenues, CPI-adjusted, averaged $673 million, and ranged from $2.7 million (College of Holy Cross in 2009) to $11.3 billion (Harvard University in 2007).

[12] I made multiple attempts to obtain both financial and records data from the NCAA. They informed me that they are not allowed to share finance data per their membership agreement. The basketball records data that they shared had several missing values and data quality issues. As a result, I decided to use data from Sports Reference.

[13] Other sources, like the NCAA data used in Essay 2, only include a total wins figure.

[14] Missing values appeared to be largely a result of IPEDS parent-child issues related to branch campuses (see Jaquette and Parra, 2014). It is not believed that these missing values introduce any clear bias to this sample; the 35 missing values correspond to 27 different institutions.

Descriptive statistics for the components of the composite assignment variable, which is described in detail below, are also presented in Table 3.2. Regular season wins averaged 14.34 and ranged from 0 to 30.[15] Conference tournament wins averaged 0.59 and ranged from 0 to 3. Finally, strength of schedule average 0.30 and ranged from -15.81 to 12.70. It should be noted that I am using the strength of schedule values published by Sports Reference. Different sports data providers calculate strength of schedule differently, which results in different absolute values and scales. The Sports Reference calculation utilizes opponents' average point spreads and includes all opponents except non-Division I teams (Sports Reference, 2014). A larger strength of schedule value signifies that a team's opponents have been more successful.

The NCAA men's basketball tournament serves as the quasi-experiment, with the teams making the field in the treatment group and those not making the tournament serving as the control. Just as van der Klaauw (2002) had information on the assignment rules of financial aid that allowed him to employ a regression discontinuity design, I was able to exploit what is known about the selection mechanism for NCAA tournament to employ a similar regression discontinuity design.

Selection is based on a team's performance up to the point of the NCAA tournament. This includes regular season games and games played in postseason conference tournaments. The path to selection, however, varies for different teams. Automatic bids to the NCAA tournament are reserved for the winners of each of the conference tournaments. For teams participating in the smaller athletic conferences, this may be the only path to the tournament. "At-large" bids are awarded by a selection committee to the best remaining teams. Teams from the largest athletic conferences typically receive the vast majority of the at-large bids, but these

[15] Although not shown in Table 3.2, total number of regular season games played averaged 28.72 and ranged from 16 to 32.

at-large bids are open to all Division I teams. These at-large bids are the focus of this paper. I am asserting that assignment into the treatment group (i.e., being selected as an at-large bid into the tournament) can be closely replicated through a developed assignment variable that incorporates factors believed to be considered by the selection committee, even though the committee's precise selection/assignment method is not known.

Number of wins is the most objective measure of a team's performance prior to the NCAA tournament and forms the basis of the developed assignment variable. In fact, number of wins was the initial inspiration to evaluate the effects of the tournament with a regression discontinuity approach since it has generally been accepted that 20 wins is a "magic number" of wins for teams from the largest conferences to lock up a tournament spot. However, in order to include all institutions in the sample, a more nuanced assignment variable was needed for this study. The selection committee undoubtedly considers additional factors besides number of wins when determining who receives the at-large bids. For example, overall strength of schedule, non-conference strength of schedule, and performance in recent games are factors that are often discussed as possible selection criteria. Non-conference strength of schedule, in particular, has been cited as receiving priority by the selection committee (Stevens, 2013), but the exact criteria and the weights given to each are kept private and not released by the selection committee.

The first step, then, was to develop a metric that predicted tournament selection based on these known criteria. Because the actual selection process is not disclosed, this task was somewhat subjective in nature, but the following formula used to establish the assignment variable for this study:

$$X_{it} = W_{reg,it} + (2*(SOS_{it} - 6)/s_{sos}) + (SOS_{it} - SOS_{conf,i}) + (1.15*W_{conf,it}) \qquad (3.1)$$

where X_{it} is the assignment score for institution, *i*, in year, *t*; $W_{reg,it}$ is the number of regular season wins for institution, *i*, in year, *t*; SOS_{it} is the strength of schedule for institution, *i*, in year, *t*; s_{sos} is the sample standard deviation for strength of schedule; $SOS_{conf,i}$ is the mean strength of schedule for the conference of institution, *i*; and $W_{conf,it}$ is the number of conference tournament wins for institution, *i*, in year, *t*.

In short, the assignment score uses the number of regular season wins as the foundation for tournament selection, and institutions are essentially rewarded bonus points for a high strength of schedule, a strength of schedule value in excess of the conference mean across the sample, and recent performance. The general strength of schedule contribution to the assignment score was normalized around six, which, upon inspection of the data, appeared to be a reasonable strength of schedule for an at-large bid. Strength of schedule for the entire sample average -0.30 and ranged from -15.81 to 12.70. However, for institutions that received at-large bids, strength of schedule averaged 7.17 and ranged from -1.82 to 12.70. Furthermore, the average number of regular season wins was notably higher for the at-large bids with a SOS less than six than it was for at-large bids with a SOS of more than six, 23.04 and 21.39 respectively. This may suggest that SOS was additive to the selection score of teams with a SOS greater than six, but not necessarily for the teams with a SOS less than six, whose selection was likely more heavily influenced by the higher number of wins. In order to normalize and scale the SOS contribution appropriately in relation to regular season wins, the difference was divided by the standard deviation and multiplied by two. Another way of thinking about this component of the assignment score is that institutions receive two bonus points (the equivalent of 2 wins) for each standard deviation that their SOS exceeds six.

I did not have a variable for nonconference strength of schedule, but by subtracting an institution's strength of schedule from their conference's average, I obtained a proxy for the institution's strength of schedule relative to its conference peers. Since an institution plays a considerable number of games against its conference peers, and thus its strength of schedule is determined in large part by its conference counterparts, the difference between the institution's strength of schedule and the conference mean may serve as an approximate proxy for the institution's nonconference strength of schedule.

Likewise, I did not have game-by-game results that would allow for the inclusion of a true measure of recent performance (for example, number of wins in the past 10 games). However, I did have the number of conference tournament wins. Since these are games played after the regular season and before the NCAA tournament, this may serve as a measure of a team's recent performance. As such, these recent games receive a 15% premium in the assignment score. 15% was chosen so as to recognize the "hot" teams but not overweight the impact of these final games before selection. For at-large bids, the number of conference tournament wins in the sample ranges from zero to three, so the maximum excess benefit that a team gets from these wins is approximately equal to half a regular season win.

It is not expected that this developed assignment score will perfectly predict tournament status. It includes the criteria that have been mentioned as potential selection criteria and for which I have data. Other possible criteria that the committee may consider, but for which I had no data, include injuries to key players or "signature wins" against top opponents. Members of the selection committee may also be biased because of their ties to institutions or conferences. Because of these additional factors, my assignment measure of wins is understandably not the sole determinant of treatment status. Thus, I employed a fuzzy regression discontinuity design

where the likelihood of receiving the treatment varies with the assignment variable, but is discontinuous at the rating score. This fuzzy regression discontinuity, where the probability of treatment jumps at the cut score, is different from a sharp regression discontinuity where the probability actually jumps from zero to 1 at the cut score. If my assignment score was solely deterministic of NCAA tournament selection, this study would use a sharp RD design.

The next step was to analyze the existence of a discontinuity in the composite assignment score. Figure 3.1 shows a basic graph of the probability of making the tournament by assignment score. In Figure 3.1, the bin size used to determine the probability of making the tournament is one. The probability for each bin, then, is simply the number of teams that made the tournament divided by the total number of institutions with an assignment score in that particular bin (e.g., an assignment score between 20 and 21). In Figure 3.1, there does seem to be a distinct jump in the probability of making the tournament around an assignment score of 21. In order to see if this discontinuity stood up to a more granulated view, and to pinpoint a more precise location of the discontinuity, I create a similar chart, but with a bin size of 0.25, which can be seen in Figure 3.2. Here the discontinuity is less pronounced, but there does appear to be jump at an assignment score of 21.25.

To further test the significance of the discontinuity, I ran a regression of the following equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_1^2 + \beta_3 X_1 X_2 + \beta_4 X_1^2 X_2 + \beta_5 X_2 + \varepsilon \qquad (3.2)$$

where Y is the propensity score for making the tournament given the assignment score (bin size = 0.25), X_1 is the assignment score centered around the cut score of 21.25, and X_2 is a dummy variable for exceeding the cut score of 21.25. The quadratic terms and interaction terms are included because the relationship does not appear to be linear in Figures 3.1 and 3.2. Table 3.3

shows the results of this regression analysis. The result of interest in this regression is the significance of the coefficient for the dummy variable, β_5 (labeled as the variable Cut Score Dummy in Table 3.3), which represents the jump in the probability of making the tournament associated with having an assignment score of at least 21.25. The coefficient is statistically significant at the $p < .01$ level and the sign is positive. This result supports the discontinuity assumption that the probability of making the tournament increases significantly when the composite assignment score of 21.25 is reached.

Figure 3.3 shows the conceptual framework for this study. It highlights the assignment variable, treatment variable (participation in the NCAA tournament), and the outcome variables of interest (basketball, athletics, and institutional revenues). The conceptual model also highlights the control variable that is used in some analyses, which will be discussed in more detail below, and a key assumption of the regression discontinuity design. At the discontinuity, it is assumed that observed and unobserved covariates – depicted as X's and U's respectively in Figure 3.3 – impact the treatment and control groups in the same way, and can thus be ignored. In other words, I am assuming that the only difference at the cutoff point is the treatment status. While this condition cannot necessarily be fully tested, baseline characteristics can be compared within in narrow range of the cut score to determine if the observations just on one side of the cut score are different than those on the other side of the cut score. Appropriate baseline characteristics for comparison are not always obvious or available, but in my case, it made sense to compare number of athletes, number of sponsored sports, institutional enrollment, and institutional tuition. These variables generally measure athletic department size and institutional size, so they will give a sense of whether institutions and their athletic departments just under the cut score are, on average, the same as institutions just above the cut score. Table 3.4 shows

descriptive statistics for the observations just below and just above the cut score of 21.25 (bin size = 1). The means suggest that the two subgroups have very similar baseline characteristics.

One of the conditions of the regression discontinuity design is that variation in the treatment near the cut score is assumed to be randomized. However, a common violation of this condition is when the agents can manipulate the assignment variable. If agents can manipulate the assignment variable and the treatment is a benefit that they desire, they have an incentive to arrange for an assignment score that receives the treatment. McCrary (2008) points out that this may result in "surprisingly many individuals just barely qualifying for a desirable treatment assignment and surprisingly few failing to qualify" (p. 699). McCrary proposes a test for evaluating the discontinuity in the density function of the assignment variable around the cut score. The estimator for this discontinuity is shown in Table 3.5 and a graphical representation is shown in Figure 3.4. The estimator and the graphical evidence suggest that the discontinuity in the density function is not significant. This is not surprising given that the assignment variable in this case has been developed and is presumably unknown by agents, but more importantly, the actual selection criteria are also unknown to agents. Number of wins, which is the primary component of the composite assignment variable, is also difficult to manipulate. In theory, one team could devise a schedule with weak opponents in an attempt to maximize wins, but this should lead to a low strength of schedule, which also contributes to the assignment score. In other words, the composite assignment variable in this study should be difficult to manipulate and the agents do not know the cut score for treatment status.

The fuzzy regression discontinuity design implemented in this study includes two steps. The first step assigns propensity scores based on the number of wins. This step is essentially

specifying an instrumental variable and is described by the following equations which have been closely adapted from Lee and Lemieux (2009):

$$D_{it} = \gamma + \delta T_{it} + g(X - c) + v_{it} \quad (3.3)$$

where X is the assignment variable of wins, D_{it} is the probability of institution, *i*, making the NCAA tournament in year, *t*, given their assignment score (i.e., Pr(D=1 | X=x)), T_{it} is an indicator variable for the assignment variable exceeding the cut score, g(·) is the functional form of X centered around the cut score of c, and v_{it} is an error term independent of X. In Equation 3.3, δ represents the increase in the probability of receiving the treatment when the assignment variable exceeds the cut score.[16] The second step in the process can be specified by:

$$Y_{it} = \alpha + \tau D_{it} + f(X - c) + \varepsilon_{it} \quad (3.4)$$

where Y_{it} is the outcome variable of basketball, athletic, or institutional revenue for institution, *i*, in year, *t*. X is still the assignment variable, τ is the treatment effect, D_{it} is the estimated propensity score from Equation 3.3, f(·) is the functional form (e.g., linear would be β(X – c)), and ε_{it} is the unobserved error term. For the analyses of effects in the subsequent year, the dependent variable in Equation 3.4 can be written as $Y_{i(t+1)}$. Subsequent year, *t + 1*, has been chosen for this analysis simply because of its proximity to the treatment effect and is when one would expect to find any effect on subsequent ticket sales, tuition revenue, etc. It is not clearly evident how any carryover effects, if real, can be expected to last, so only the one-year lead is tested here.

As apparent in Equations 3.3 and 3.4, the dataset is structured as a panel identified by institution-year. However, Lee and Lemieux (2010) point out that including individual or time

[16] Results from this first-stage are included in Appendix C.

fixed-effects, which typically accompany panel data analysis, is not necessary for RD designs. Others have also recommended against using any covariates in a regression discontinuity design because they could reduce efficiency and greatly increase bias (Nichols, 2011). For this reason, my models do not include any covariates.

Results and Discussion

As mentioned earlier, there are two time periods of interest for the dependent variables in the models: the year of the tournament appearance and the year following the tournament appearance. These time periods correspond to same-year and next-year effects on my dependent variables. Separate tables are presented for each time period. In addition to models run with all institutions, analyses have been run with a restricted sample that only includes institutions that belong to conferences that received a substantial number of at-large bids. The conferences included in this restricted sample are discussed in more detail below, and this restriction serves to limit the sample to institutions that are more similar to one another. In each of the tables discussed below, results for all three dependent variables – basketball revenues, total athletic revenues, and institutional revenues – are presented. Each of the results tables shows results using the optimal bandwidth based on Imbens and Kalyanaraman (2009). In addition, results at three additional bandwidths are presented. These alternative bandwidths were chosen such that points on both sides of the optimal bandwidths for the same-year, full model (Table 3.6) were selected. These additional bandwidths will allow for a discussion of the sensitivity of the results to bandwidth selection.

Table 3.6 presents the regression discontinuity results for the effects of making the tournament on the three different types of revenue in the same year as the tournament appearance. The results suggest a positive effect of making the tournament on basketball

revenues ($p<0.05$) and total athletic revenues ($p<0.1$ or smaller) at the optimal bandwidth and all alternative bandwidths. These findings are not surprising given my hypotheses and the fact that these two revenue types are related. In fact, given the existence of tournament payouts, it would have been unexpected to not find a positive effect. The magnitude of effect on basketball revenues was approximately $2.8 million and the magnitude of effect on total athletic revenues was approximately $14.8 million. The size of the effect for basketball revenues ($2.8 million) is higher than a recent estimate of the NCAA payout for making the tournament of $1.5 million (Smith, 2013). However, this estimate was only for the payouts from the NCAA's basketball fund. One would expect to find a higher effect on all basketball revenues, so $2.8 million does not seem unreasonable. The size of the spread between these effect sizes on basketball revenues and total athletic revenues is a little surprising. Some difference between the two effects might be expected as certain types of athletic department revenues affected by the tournament appearance may not be allocated to basketball. For example, royalties from general merchandise sales, which might be expected to increase as a result of a tournament appearance, may not be allocated to specific sports. These types of revenues would show up in the total athletic revenue variable, but not the basketball revenue variable. For this reason, a difference in the effect sizes between total athletic revenues and basketball revenues may be explainable and even expected. However, size of the difference in these results – approximately $12 million – is large.

No significant effect was found on institutional revenues. However, institutional revenues are largely determined before a team's NCAA tournament appearance. In large part, these revenues are determined at the beginning of the academic year, when enrollments, tuition, and state appropriations (in the case of public institutions) are set. Other types of institutional revenues, like grants and contracts or donations, may be determined throughout the year, but

testing the effects of an NCAA appearance on same-year institutional revenues is probably not the proper test. One of the main mechanisms through which I hypothesized that making the tournament could impact institutional revenues was through increased tuition revenues realized by institutions capitalizing on the "advertising effect" and subsequent increases in applications. This effect could only take place in a subsequent enrollment cycle, so a better assessment of the effect of making the tournament on institutional revenues requires a one-year lead measure of revenues.

In Table 3.7, regression discontinuity results are shown when the outcome variables are measured in the year following the tournament appearance. At all bandwidths, the tournament appearance has a significant effect on basketball revenues ($p<0.1$ or smaller), but no significant effect on total athletic revenues or institutional revenues. The magnitude of effect on basketball revenues is approximately $2.7 million, meaning that making the NCAA tournament is associated with an increase in revenues of $2.7 million. This result is very similar to the same-year effect on basketball revenues (Table 3.6). Collectively, these results suggest that there is a carry-over effect for making the tournament on basketball revenues, but not other types of revenues. This is a little surprising since one would expect that any effect on basketball revenues would show up in total athletic revenues as well.

While Table 3.6 and 3.7 present results for the regression discontinuity model run will all institutions eligible for at-large bids, historical evidence shows that some conferences fare much better than others in obtaining at-large bids than others. In fact, some conferences did not have a single at-large bid in this 12-year sample. While the assignment variable should account for any differences across conferences in the probability of making the tournament, it is possible that restricting the sample to only those conferences known to receive a substantial number of at-

large bids will reduce any noise generated by including institutions that would be expected from historical evidence to have a low probability of receiving an at-large bid simply based on their conference. In this way, these restricted sample analyses serve as a robustness check to the full sample models. Tables 3.8 and 3.9 present the results of the regression discontinuity analysis when the sample is restricted to the 17 conferences[17] with at least one at-large bid between 2001 and 2012. With this restriction, Table 3.8 shows that making the tournament has a significant effect in the optimal bandwidth ($p<0.1$) on basketball revenues in the year of the tournament appearance. The magnitude of this effect is approximately $2.9 million, very similar to the same-year effect for the full sample in Table 3.6. In addition, two of the additional bandwidths produced significant results for basketball revenues. Significant results were also found for total athletic revenues in Table 3.8, but only for alternative bandwidths. Table 3.9 shows the restricted sample results when the outcome variables measure the types of revenue in the year following the tournament appearance. Here, the only significant effects are found on basketball revenues using the alternative bandwidths. One possible explanation for this is that next-year effects may be associated with success in the tournament, not just making the tournament. In other words, next-year effects may only be realized by those that make tournament runs (e.g., making the Final Four), and not everyone that makes the tournament.

While the results, as a whole, provide some evidence of a positive effect of making the tournament on basketball and total athletic revenues, there are some concerns about these findings. Most importantly, the standard errors associated with the regression discontinuity estimates and the optimal bandwidths over which the effects are estimated are consistently large. This is not entirely surprising since fuzzy regression discontinuity designs typically have larger

[17] These conferences are the ACC, Atlantic 10, Big 12, Big East, Big Ten, Big West, Colonial, Conference USA, Horizon, Metro Atlantic, Missouri Valley, Mountain West, Pac 10/12, SEC, Sun Belt, WAC, and WCC.

bandwidths than sharp regression discontinuity designs. Also concerning is the sensitivity to bandwidth selection of the estimates. For example, in Table 3.8, a significant, positive effect was found using the optimal bandwidth and two of the three alternative bandwidths, but not all bandwidths. At the same time, the magnitudes of effect varied greatly by bandwidth. Again using Table 3.6's basketball revenues results, the effect size was $2.8 million using the optimal bandwidth (8.78), but over $7 million using a bandwidth of three. All of this may raise concerns about the validity of the research design.

In summary, despite some concerns, the findings support the existence of a positive effect of making the NCAA men's basketball tournament on basketball-specific revenues and total athletic revenues. No evidence of a positive effect of making the tournament on institutional revenues was found. This research provides further insight into the financial effects of intercollegiate athletics. These activities are a highly visible aspect of higher education in the United States and they generate and consume increasingly more resources. As such, it is important to understand how athletics revenues are impacted by various events. As one of the largest and most prestigious events in college sports, the impacts of the NCAA men's basketball tournament are of particular interest. While the financial effects of athletics success have been researched in previous work, these studies have largely focused on donations. This study makes a unique contribution by focusing on basketball-specific, total athletic, and institutional revenues. Another contribution of this study is its application of a quasi-experimental, regression discontinuity design. Anderson (2012) is the only previous work that I am aware of that utilizes quasi-experimental design (propensity score matching) in the field of intercollegiate athletics, and I am not aware of any research that applies a quasi-experimental approach to the NCAA men's basketball tournament as this study does.

The results of this study may be of particular interest to intercollegiate athletics policymakers, namely the NCAA, directors of athletics, institutional leaders, and perhaps even coaches as they negotiate their contracts. The NCAA may consider the findings from this study in determining how to administer the men's basketball tournament. For example, perhaps knowing the financial implications of making the field will persuade the NCAA to expand or contract the field. The decisions to expand the field from 64 to 65 in 2001 and then from 65 to 68 in 2011 have presumably been made without the type of meaningful information that this study provides. Directors of athletics and institutional leaders may find this research useful in budget setting. Knowing the effects of tournament appearances may allow directors of athletics to adjust their budgets accordingly and institutional leaders may choose to adjust institutional contributions to athletics.

Limitations and Future Research

While the findings may provide useful insights and the design itself makes a unique contribution to the intercollegiate athletics literature, there are some limitations to this study. One limitation is simply the data. While the EADA data includes sport-specific data to fulfill its purpose of tracking equity in athletics, athletic departments do not necessarily assign all revenues by sport. More traditional financial data may include revenues by source (e.g., ticket sales, donations, etc.), like the USA Today Athletics Finance data used in Essay 2. As a result of the unique nature of the EADA data and the fact that it is unaudited, there may be definitional issues and other data quality issues. Another limitation may be the composite assignment score itself, which is defensible, yet still somewhat subjective. While it was built with the available data and an understanding of what likely contribute to tournament selection, it is certainly not as clean as other applications of regression discontinuity designs where there is a single contributor to

assignment score and known cutoff value. This study also does not consider the effects of tournament performance on the outcome variables and only considers at-large bids, which is necessary given the different selection criteria, yet leaves unanswered questions about the effects of receiving an automatic bid or performance (winning) during the tournament.

Despite these potential limitations and concerns, this study will hopefully inform future research in the area. The use of the NCAA basketball tournament in a quasi-experimental framework could be expanded to study its effects on other outcomes, even those that have been studied previously through different methods, like donations, applications, and student outcomes. Similarly, while the first two research questions in this study address athletic revenues, a possible extension of this research may be to look at the effect of making the NCAA tournament on athletic expenditures. Comparing the effects on revenues and expenditures may allow for discussion of net effects.

Another extension of this study may be to consider additional time periods. Whereas this study considered carryover effects in the year following a tournament appearance, additional timeframes could be included as an extension to this study. A related extension may be to consider the impact of actual tournament performance on the difference revenue streams. In may be the case that runs deep into the tournament (e.g., Final Four appearances) may have effects on revenues that last for several years.

Finally, while the third research question only addresses total institutional revenue, a possible extension of this research may be to analyze specific institutional revenue streams, like tuition or state appropriations. State appropriations may be especially interesting given that Humphreys (2006) found a relationship between football participation and appropriations. Of course, an analysis of state appropriations would limit the data to only public institutions.

Another possible extension of this research would be to analyze to the effects of making the NCAA tournament on academic measures, like average test scores for applicants or entering students. Several studies have considered the effects of athletics on academic measures (e.g., Anderson, 2012; Bremmer & Kesselring, 1993; McCormick & Tinsley, 1987; Mixon, 1995; Toma & Cross, 1998; Tucker & Amato, 2003; Tucker, 2005), but using the proposed regression discontinuity design to analyze the effects of making the men's NCAA basketball tournament would make a unique contribution to this literature by exploring causal relationships. With changes in the intercollegiate athletics landscape, including conference realignments and tournament changes, revisiting this study in future years may also yield interesting insights into the effects of these changes.

Table 3.1: Model variables, descriptions, and data sources

Variable Name	Variable Long Name	Variable Description	Source Code
bball_rev	Basketball Revenue	Revenues allocated to basketball activities.	1
ath_rev	Total Athletic Revenue	Total athletic department revenues, including those allocated to a specific sport and unallocated revenues.	1
inst_rev	Institutional Revenue	Total institutional revenue.	2
w_reg	Regular Season Basketball Wins	The number of basketball wins during the regular season.	3
w_conf	Conference Tournament Wins	The number of wins during the postseason conference tournament.	3
sos	Strength of Schedule	Strength of schedule for the basketball season.	3
CPI	Consumer Price Index	Consumer price index, all urban consumers (CPI-U), all items.	4

Source Code	Variable Source	URL
1	Equity in Athletics Data Analysis Cutting Tool	http://ope.ed.gov/athletics/
2	Integrated Postsecondary Education Data System (IPEDS)	http://nces.ed.gov/ipeds/
3	Sports Reference	http://www.sports-reference.com/cbb/
4	US Department of Labor, Bureau of Labor Statistics	http://www.bls.gov/cpi/

Table 3.2: Descriptive statistics

VARIABLES	Observations	Mean	Std. Dev.	Min.	Max.
Basketball rev. (CPI-adj)	3,515	$3,025,320	$3,868,434	$25,400	$41,700,000
Total athleic rev. (CPI-adj)	3,515	$22,800,000	$23,300,000	$165,841	$163,000,000
Institutional rev. (CPI-adj)	3,480	$673,000,000	$944,000,000	$2,724,147	$11,300,000,000
Regular season wins	3,515	14.34	5.13	0.00	30.00
Conference tournament wins	3,515	0.59	0.74	0.00	3.00
Strength of Schedule (SOS)	3,515	-0.30	5.55	-15.81	12.70
Assignment variable	3,515	12.67	.97	-9.41	33.97
Number of institutions	345				
Obs. per Institution: Min	1				
Obs. per Institution: Avg	10.19				
Obs. per Institution: Max	12				

Figure 3.1: Probability of making the tournament by assignment variable, bin size = 1

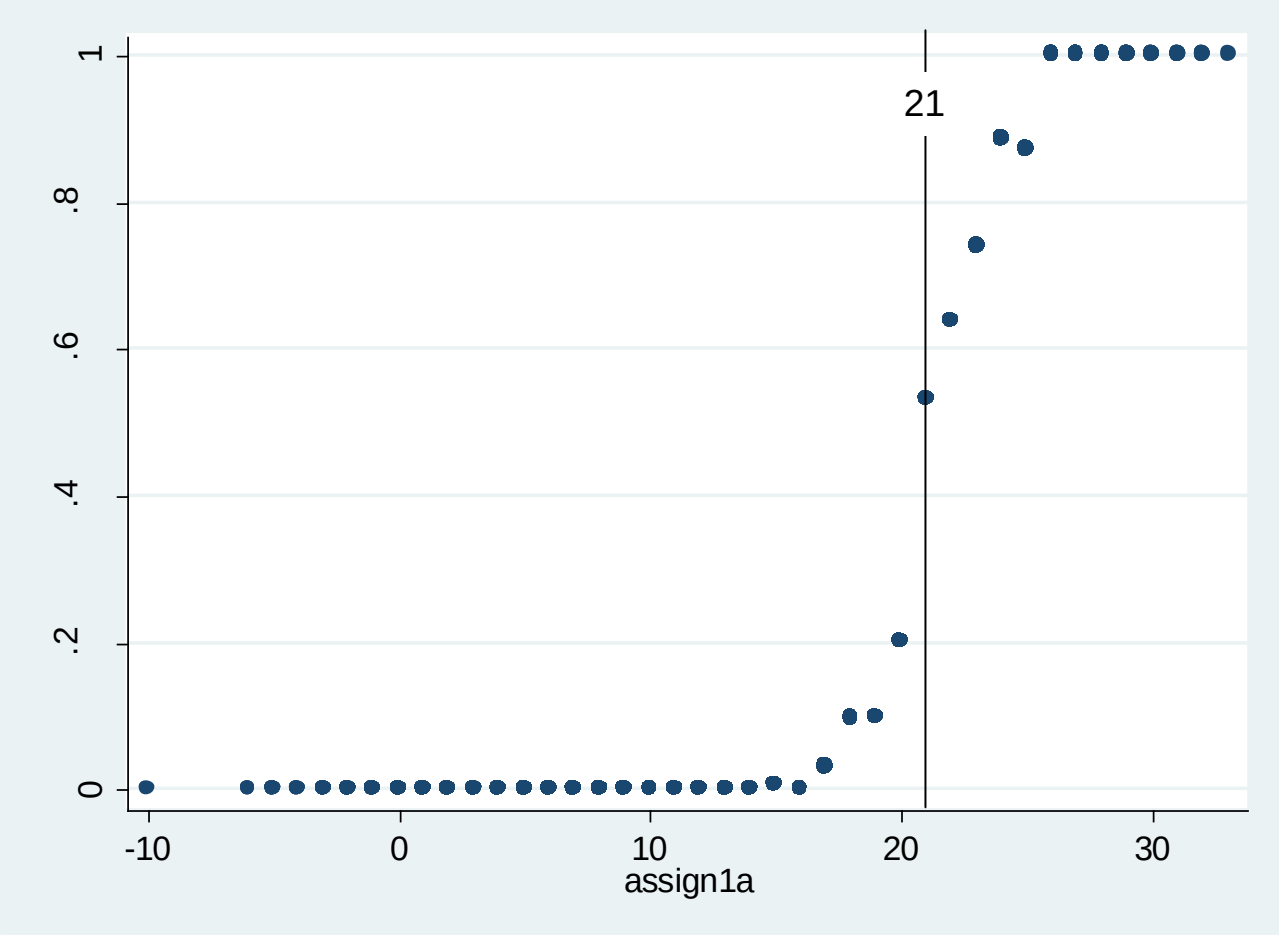


Figure 3.2: Probability of making the tournament by assignment variable, bin size = 0.25

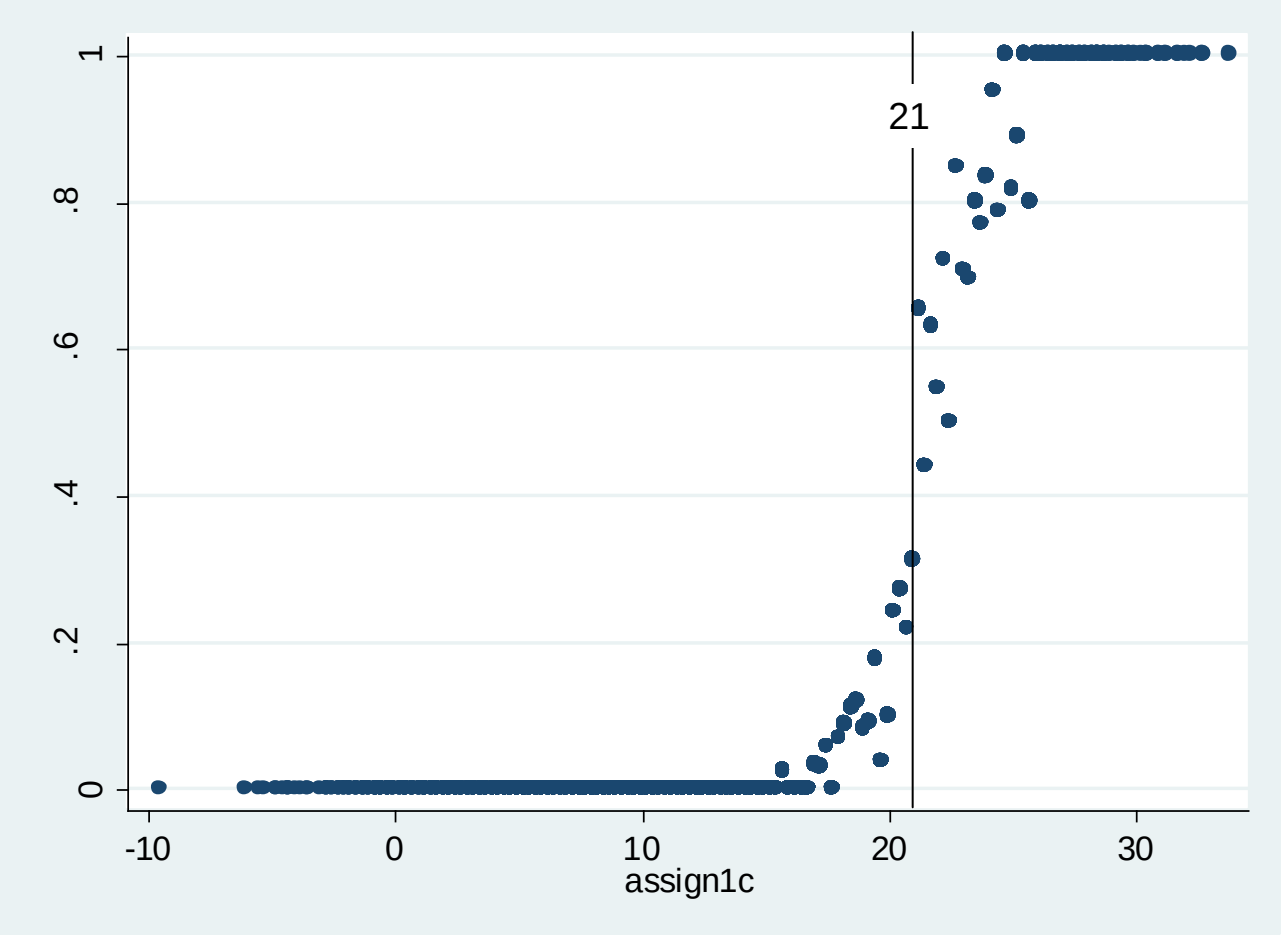
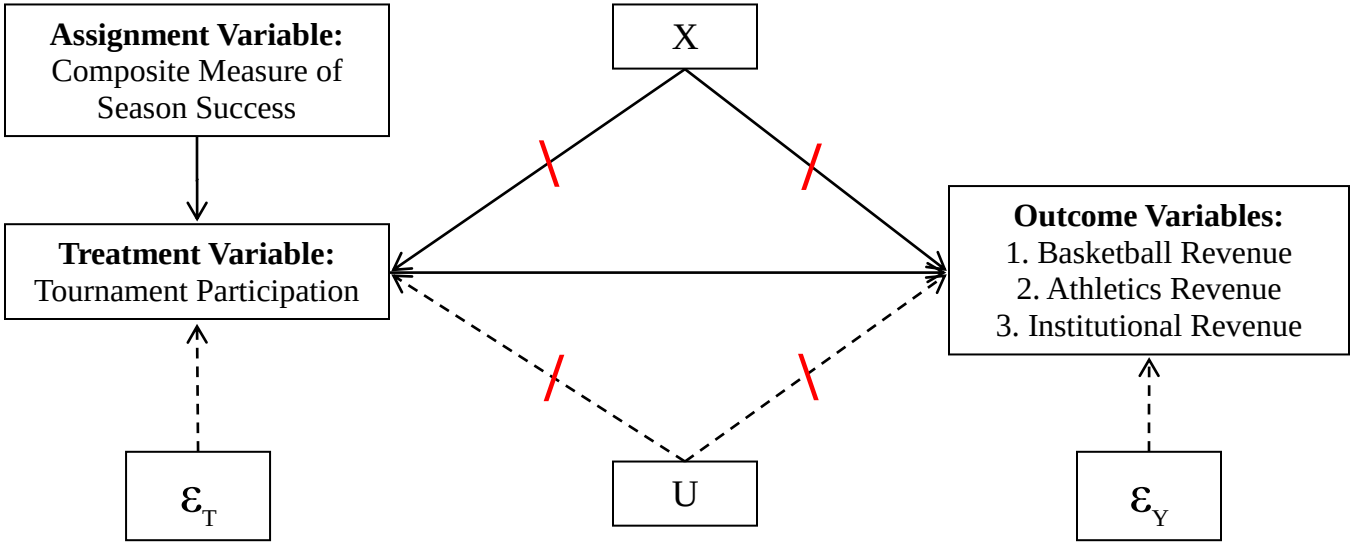


Table 3.3: Regression analysis of discontinuity at cut score

VARIABLES	probability
Assignment (centered)	0.0215***
	(0.000484)
$Assignment^2$	0.000751***
	(2.10e-05)
Assignment * Cut Score Dummy	0.100***
	(0.00239)
$Assignment^2$ * Cut Score Dummy	-0.00808***
	(0.000244)
Cut Score Dummy	0.386***
	(0.00505)
Intercept	0.136***
	(0.00250)
R^2	0.9749
Observations	3,515
Number of unitid	345

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 3.3: Conceptual model of the effect of tournament participation on revenues



Note: X represents observed covariates and U represents unobserved covariates.

Table 3.4: Descriptive statistics above and below cut score

VARIABLES	Below Assignment [20.25, 21.25) n = 90 Mean	Above Assignment [21.25, 22.25) n = 100 Mean
Number of Sponsored Sports	16.62	16.68
	(4.28)	(3.57)
Number of Athletes	528	527
	(186)	(189)
Enrollment	20,207	19,893
	(11,409)	(11,354)
Tuition	$ 11,332	$ 12,529
	(10,652)	(10,621)

Standard deviations in parentheses

bin size = 1

Table 3.5: Results from the McCrary density test

VARIABLES	
Estimator (log difference in height)	0.20980
	(0.13208)
bin size	0.23522
bandwidth	5.86504

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 3.4: Graphical representation of McCrary density test

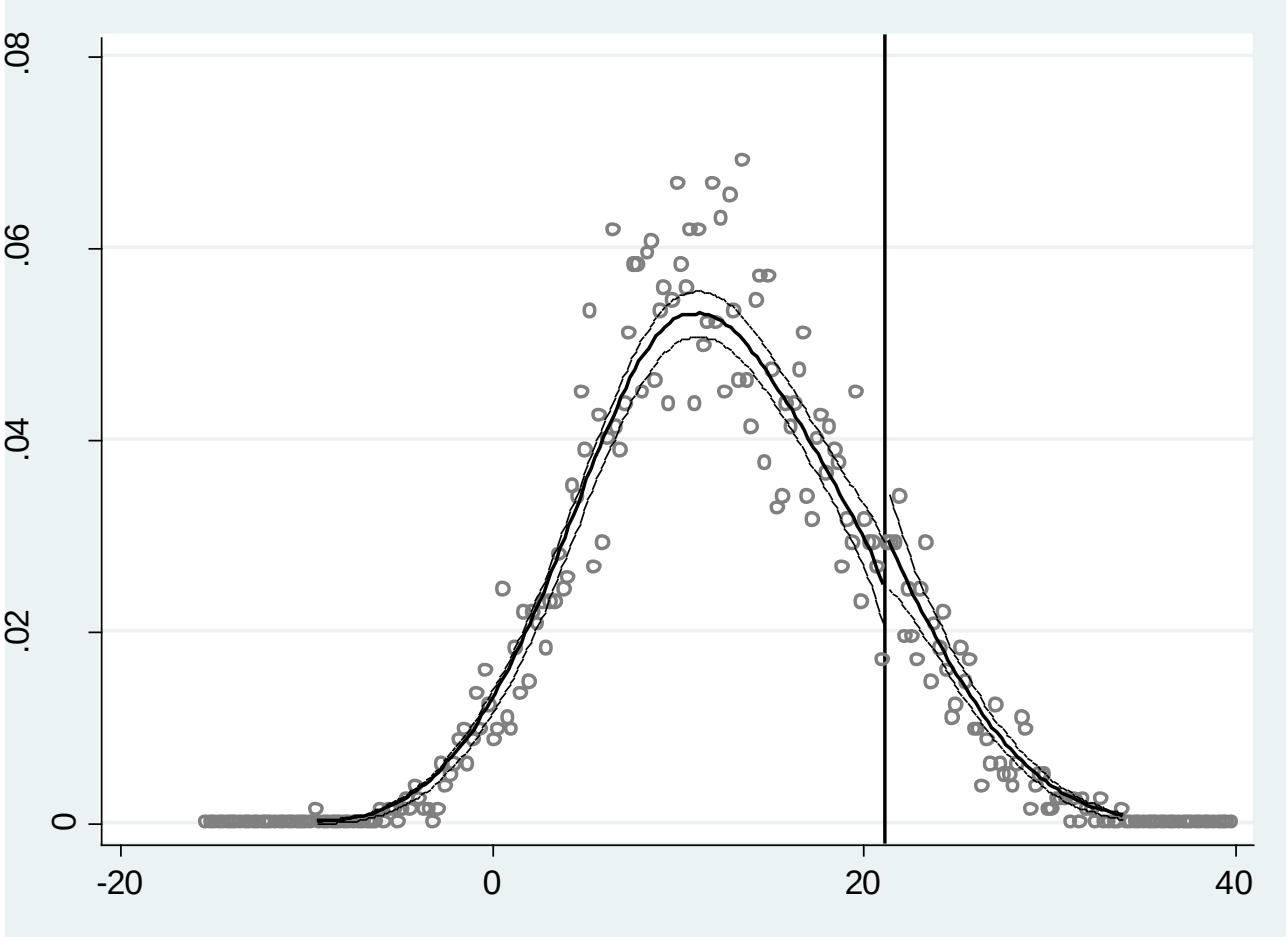


Table 3.6: Regression discontinuity results, same-year effects of making the tournament

			Additional Bandwidths		
	Optimal Bandwidth[1]		3	6	9
Basketball Revenues	8.78	2,777,462**	7,224,925**	4,443,191**	2,699,676**
		(1,305,152)	(2,988,164)	(1,777,450)	(1,279,418)
Total Athletic Revenues	8.97	1.48e+07*	3.58e+07**	2.00e+07*	1.48e+07*
		(7,652,446)	(1.62e+07)	(1.06e+07)	(7,632,257)
Institutional Revenues[2]	6.92	-1.71e+08	-7.47e+08	2.41e+08	-9.63e+07
		(3.74e+08)	(8.46e+08)	(4.31e+08)	(2.85e+08)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1] Optimal bandwidth based on Imbens & Kalyanaraman (2009).

[2] Because of missing values, the estimating sample for the analyses of institutional revenues is not the same as the other analyses (n = 3,480 rather than 3,515).

Table 3.7: Regression discontinuity results, next-year effects of making the tournament

			Additional Bandwidths		
	Optimal Bandwidth[1]		3	6	9
Basketball Revenues	8.96	2,700,387*	7,720,548**	4,270,765*	2,691,180*
		(1,538,804)	(3,918,266)	(2,235,682)	(1,533,060)
Total Athletic Revenues	9.38	9,122,719	1.16e+07	7,654,425	8,814,815
		(8,053,035)	(2.16e+07)	(1.27e+07)	(8,386,959)
Institutional Revenues[2]	7.96	4,453,427	-5.79e+08	-1.14e+08	4.27e+07
		(3.28e+08)	(8.69e+08)	(4.41e+08)	(2.90e+08)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1] Optimal bandwidth based on Imbens & Kalyanaraman (2009).

[2] Because of missing values, the estimating sample for the analyses of institutional revenues is not the same as the other analyses (n = 3,480 rather than 3,515).

Table 3.8: Regression discontinuity results, same-year effects with restricted sample

			Additional Bandwidths		
	Optimal Bandwidth[1]		3	6	9
Basketball Revenues	7.60	2,885,120*	6,852,443**	3,964,546**	2,074,908
		(1,470,530)	(3,197,282)	(1,772,353)	(1,273,924)
Total Athletic Revenues	9.36	1.17e+07	3.55e+07**	1.82e+07*	1.20e+07
		(7,510,574)	(1.73e+07)	(1.07e+07)	(7,745,396)
Institutional Revenues[2]	9.73	-1.46e+08	-4.56+08	-2.30+08	-1.70e+08
		(2.60e+08)	(7.34+08)	(4.08e+08)	(2.79e+08)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1] Optimal bandwidth based on Imbens & Kalyanaraman (2009).

[2] Because of missing values, the estimating sample for the analyses of institutional revenues is not the same as the other analyses (n = 3,480 rather than 3,515).

Table 3.9: Regression discontinuity results, next-year effects with restricted sample

			Additional Bandwidths		
	Optimal Bandwidth[1]		3	6	9
Basketball Revenues	9.97	1,854,218	7,409,692*	3,812,564*	2,037,955
		(1,406,194)	(4,065,780)	(2,208,107)	(1,532,557)
Total Athletic Revenues	8.17	4,734,021	7,510,116	4,207,400	4,894,909
		(9,425,086)	(2.22e+07)	(1.26e+07)	(8,577,841)
Institutional Revenues[2]	7.66	-1.09e+08	-7.39e+08	-2.28e+08	-6.02e+07
		(3.52e+08)	(9.07e+08)	(4.47e+08)	(2.99e+08)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1] Optimal bandwidth based on Imbens & Kalyanaraman (2009).

[2] Because of missing values, the estimating sample for the analyses of institutional revenues is not the same as the other analyses (n = 3,480 rather than 3,515).

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APPENDIX A

Name of Reporting Institution: University of Alabama, Tuscaloosa
Information for the Reporting Year: 2009

Check to release your information to your conference
This will enable your data to be included in a summary that is sent to the conference office if they request it.

Number of Undergraduates (i.e.; full-time, baccalaureate, degree-seeking students) by Gender:
(Use fall semester enrollment figures)

	Number	Percent
Male Undergraduates:	10569	47.3%
Female Undergraduates:	11774	52.7%
Total Undergraduates:	22343	100.0%

Institutional Contact:

Primary Contact Person:
Person best suited for the NCAA to contact with questions regarding the data submitted.
Title:
Phone:
Email:

CEO:
CEO's e-mail address:
---
* University CFO:
* University CFO's e-mail address:

Auditors(NCAA Agreed-Upon Procedures):

[redacted]

Current Classification:

NCAA division	I-A	II (with football)
	I-AA	II (without football)
	I-AAA	III (with football)
		III (without football)

Miscellaneous Information:
Total Revenues and Operating Expenses of the Entire Institution as Indicated on the Institution's Financial Statement:

Revenues:	627198604
Expenses:	725607957

Institution's Education and General Expenses:
* E & G as defined in NACUBO'S Finance and Reporting Manual: E&G expenses are categorized as instruction, research, public service, academic support, student services, instructional support, and scholarships and fellowships. E&G does not include auxiliary enterprises, hospitals or independent operations.

E & G :	430759559

Average Cost of Full Grant-In-Aid:
(Institution's total cost for tuition, fees, room and board, and books)

In-State:	16942
Out-of-State:	28542

15.02.5 Full Grant-in-Aid. A full grant-in-aid is financial aid that consists of tuition and fees, room and board, and required course-related books.

Total Cost of Attendance:

In-State:	20796
Out-of-State:	33145

15.02.2 Cost of attendance. The "cost of attendance" is an amount calculated by an institutional financial aid office, using federal regulations, that includes the total cost of tuition and fees, room and board, books and supplies, transportation, and other expenses related to attendance at the institution. (Adopted: 1/11/94) Refer to 15.02.2.1 for Calculation of Cost of Attendance.

Please verify the Men's, Women's and Mixed Teams your institution sponsors:

Sport	Men's Teams Only	Women's Teams Only	Mixed Teams
Baseball	X		
Basketball	X	X	
Bowling			
Cross Country	X	X	
Equestrian			
Fencing			
Field Hockey			
Football	X		

Golf	X	X	
Gymnastics		X	
Ice Hockey			
Lacrosse			
Rifle			
Rowing		X	
Rugby			
Skiing			
Soccer		X	
Softball		X	
Squash			
Swimming	X	X	
Tennis	X	X	
Track, Indoor	X	X	
Track, Outdoor	X	X	
Volleyball		X	
Water Polo			
Wrestling			
Others			

Revenue/Expense Summary

ID	Item	Amount	Definition
1	Ticket Sales.	28611953	Include revenue received for sales of admissions to athletics events. Include ticket sales to the public, faculty and students, and money received for shipping and handling of tickets. Do not include ticket sales for conference and national tournaments that are pass-through transactions. Report amounts in excess of a ticket's face value paid by ticket purchasers (for example, to obtain preferential seating) in Category 4 (Contributions).
2	Student Fees	0	Include student fees assessed and restricted for support of intercollegiate athletics.
3	Guarantees.	38500	Include revenue received from participation in away games.
4	Contributions.	29641806	Include amounts received directly from individuals, corporations, associations, foundations, clubs or other organizations that are designated, restricted or unrestricted by the donor for the operation of the athletics program. Report amounts paid in excess of a ticket's value. Contributions shall include cash, marketable securities and in-kind contributions. In-kind contributions may include dealer-provided automobiles (market value of the use of a car), apparel and soft-drink products for use by staff and teams. Do not report pledges until funds are allocated. Report gifts and merchandise from corporate sponsorship agreements in Category 12 (Royalties, Licensing, Advertisement and Sponsorship).
5	Compensation and Benefits Provided by a Third Party.	260242	Include all amounts provided by a third party and contractually guaranteed by the institution, but not included on the institution?s W-2 (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, compensation from camps, radio income, television income, and shoe and apparel income). This should equal Expense Categories 20 and 22 combined.
6	Direct State or Other Government Support.	0	Include state, municipal, federal and other government appropriations made in support of the operations of intercollegiate athletics. This amount includes funding specifically earmarked to the athletics department by government agencies for which the institution has no discretion to reallocate. Any state or other government support appropriated to the university, for which the university determines the dollar allocation to the athletics department shall be reported in Direct Institutional Support (item 7).
7	Direct Institutional Support.	5050985	Include value of institutional resources for the current operations of intercollegiate athletics, as well as all unrestricted funds allocated to the athletics department by the university (e.g., state funds, tuition, tuition waivers and transfers). Also include Federal Work Study support for student workers employed by athletics.
8	Indirect Facilities and Administrative Support.	0	Include value of facilities and services provided by the institution not charged to athletics. This support may include an allocation for institutional administrative cost, facilities and maintenance, grounds and field maintenance, security, risk management, utilities, depreciation and debt service. If your institution does not currently track indirect institutional support, consult your business office for a reasonable allocation. If counted here, include offsetting expenditure equal in value in Expense Category 32 (Indirect Facilities and Administrative Support).
9	NCAA/Conference Distributions including all tournament revenues.	15149392	Include revenue received from participation in bowl games, tournaments and all NCAA distributions. This category includes amounts received for direct participation or through a sharing arrangement with an athletics conference, including shares of conference television agreements. If known by sport, report as such. Include any payments received from the NCAA for hosting a championship (permissible to include in Revenue Not Related to Specific Teams).
10	Broadcast, Television, Radio, and Internet Rights.	7338001	Include institutional revenue received directly for radio and television broadcasts, Internet and e-commerce rights received through institution-negotiated contracts.
11	Program Sales, Concessions, Novelty Sales, and Parking.	72950	Include revenue of game programs, novelties, food or other concessions, and parking revenues. Revenue from sales of game program advertising is to be included in Revenue Category 12 (Royalties, Licensing, Advertisements and Sponsorships).
12	Royalties, Licensing, Advertisements and Sponsorships.	3652637	Include all revenue from corporate sponsorships, licensing, sales of advertisements, trademarks and royalties. An allocation will be necessary to distinguish revenues generated by athletics versus the university if payments are combined. Include the value of in-kind products and services provided as part of the sponsorship (e.g., equipment, apparel, soft drinks, water and isotonic products).
13	Sports Camp Revenues.	1098798	Include amounts received by the athletics department for sports-camps and clinics.
14	Endowment and Investment Income.	724550	Include endowment spending policy distribution and other investment income in support of the athletics department. These categories include only restricted investment and endowment income for the operations of intercollegiate athletics; institutional allocations of income from unrestricted endowments qualify as "Direct Institutional Support".
15	Other.	8662698	As a guide, please limit this to no more than 5% of total revenues and attempt to reclassify amounts greater than 5% to the appropriate category(ies) above to bring the category to less than 5% of the total revenue. If the number is greater than 5%, please provide the top three categories and amounts in the comments section below.
16	Subtotal Operating Revenue.	100302512	Add Columns 1-15.
Expenses			
17			Include the total amount of athletically related student aid awarded, including summer school and tuition discounts and waivers (including aid given to student-athletes who have exhausted their eligibility or who are inactive due to medical

	Athletic Student Aid.	9954368	reasons). Athletics aid awarded to non-athletes (student-managers, graduate assistants, trainers) should be reported as Expenses Not Related to Specific Teams. **It is permissible to report only dollars in the Expenses Not Related to Specific Teams row as long as you have reported non-zero entries for Equivalencies, Number of Students, and Dollars (all 3 required) for at least one sport.**
18	Guarantees.	2555250	Include amounts paid to visiting participating institutions.
19	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	15196331	Include gross salaries, bonuses and benefits provided to head and assistant coaches, which includes all gross wages, benefits and bonuses attributable to coaching that would be reportable on university and related entities (e.g., foundations, booster clubs) W-2 and 1099 forms (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, supplemental retirement allowance, compensation from camps, radio income, television income, tuition remission, earned deferred compensation benefits). Place any payment made to previous coaches to satisfy a contractual agreement for coaching in Category 23 (Severance Payments).
20	Coaching Other Compensation and Benefits Paid by a Third Party.	192298	Include all compensation paid to the coaching staff by a third party and contractually guaranteed by the institution, but not included on the institution?s W-2 (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, compensation from camps, radio income, television income, shoe and apparel income). Expense Categories 20 and 22 combined should equal Revenue Category 5 (Compensation and Benefits Provided by a Third Party).
21	Support Staff/Administrative Salaries, Benefits and Bonuses Paid by the University and Related Entities.	16034594	Include gross salaries, bonuses and benefits paid to administrative staff (i.e., football secretary, sport-specific trainer) that would be reportable on university and related entities (e.g., foundations, booster clubs) W-2 and 1099 forms (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, supplemental retirement allowance, compensation from camps, radio income, television income, tuition remission, earned deferred compensation benefits). Staff members responsible for the gender-specific athletics department, but not a specific sport (i.e., director of men?s athletics), will have their compensation figures reported as Expenses Not Related to Specific Teams fields. Athletics department staff members who assist both men?s and women?s teams (sports information director, academic advisor) will be reported as Not Allocated by Gender column.
22	Support Staff/Administrative Other Compensation and Benefits Paid by a Third Party.	67944	Include all compensation paid to the support staff by a third party and contractually guaranteed by the institution, but not included on the institution?s W-2 (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, compensation from camps, radio income, television income, shoe and apparel income). Expense Categories 20 and 22 combined should equal Revenue Category 5 (Compensation and Benefits Provided by a Third Party).
23	Severance Payments.	1232224	Include severance payments and applicable benefits recognized for past coaching and administrative personnel.
24	Recruiting.	1520826	Include transportation, lodging and meals for prospective student-athletes and institutional personnel on official and unofficial visits, telephone call charges, postage and such. Include value of use of institution?s own vehicles or airplanes as well as in-kind value of loaned or contributed transportation.
25	Team Travel	5531324	Include air and ground travel, lodging, meals and incidentals for competition related to preseason, regular season and postseason. Amounts incurred for food and lodging for housing the team before a home game also should be included. Include value of use of the institution?s own vehicles or airplanes as well as in-kind value of donor-provided transportation.
26	Equipment, Uniforms and Supplies.	1343915	Include items that are provided to the teams only. Equipment amounts are those expended from current or operating funds.
27	Game Expenses.	2210908	Include game-day expenses other than travel that are necessary for intercollegiate athletics competition, including officials, security, event staff, ambulance and such.
28	Fund Raising, Marketing and Promotion.	4989579	Include costs associated with fund raising, marketing and promotion for media guides, brochures, recruiting publications and such.
29	Sports Camp Expenses.	1623603	Include all expenses paid by the athletics department, including non-athletics personnel salaries and benefits, from hosting sports camps and clinics. Athletics personnel salaries and benefits should be reported in Categories 19, 20, 21 or 22.
30	Direct Facilities, Maintenance, and Rental.	16787445	Include direct facilities costs charged to intercollegiate athletics, including building and grounds maintenance, utilities, rental fees, operating leases, equipment repair and maintenance, and debt service.
31	Spirit Groups	633655	Include support for spirit groups including bands, cheerleaders, mascots, dancers, etc.
32	Indirect Facilities and Administrative Support.	0	Include value of facilities and services provided by the institution not charged to athletics. This support may include an allocation for institutional administrative cost, facilities and maintenance, grounds and field maintenance, security, risk management, utilities, depreciation and debt service. If your institution does not currently track indirect institutional support, consult your business office for a reasonable allocation. If counted here, include offsetting amount equal in value in Revenue in Category 8 (Indirect Facilities and Administrative Support).
33	Medical Expenses and Medical Insurance	1582831	Include medical expenses and medical insurance premiums for student-athletes.
34	Memberships and Dues.	140205	Include memberships, conference and association dues.
35	Other Operating Expenses.	9271670	Other operating expenses include printing and duplicating, subscriptions, business insurance, telephone, postage, operating and equipment leases, non-team travel and any other operating expense not reported elsewhere. Do not include indirect administration overhead provided by the university (use Category 32) or salaries and benefits (use Categories 19 or 21). Attempt to allocate all expenses to Categories 17 through 34 before using this category. As a guide, please limit this category to 10% of total operating expenses. If the number is greater than 10%, please provide the top three categories and amounts in the comments section below.
36	Total Operating Expenses.	90868971	Add Columns 17-35.

Revenue/Expense Detail

1	Ticket Sales.	28611953	Include revenue received for sales of admissions to athletics events. Include ticket sales to the public, faculty and students, and money received for shipping and handling of tickets. Do not include ticket sales for conference and national tournaments that are pass-through transactions. Report amounts in excess of a ticket's face value paid by ticket purchasers (for example, to obtain preferential seating) in Category 4 (Contributions).

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Revenues by Source	Ticket Sales.	Ticket Sales.	Ticket Sales.
Baseball	216594		
Basketball	1035838	20893	
Football	26969542		
Golf			
Gymnastics		246297	

Rowing			
Soccer			
Softball		114709	
Swimming			
Tennis	1008		
Track and Field, X-Country			
Volleyball		6972	
Others			
Subtotal All Teams	28223082	388871	
Revenue Not Related to Specific Teams			
Total Revenue	28223082	388871	

2	Student Fees	0	Include student fees assessed and restricted for support of intercollegiate athletics.

Revenues by Source	Men's Teams Only Student Fees	Women's Teams Only Student Fees	Not Allocated by Gender Student Fees
Baseball			
Basketball			
Football			
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams			
Revenue Not Related to Specific Teams			
Total Revenue			

3	Guarantees.	38500	Include revenue received from participation in away games.

Revenues by Source	Men's Teams Only Guarantees.	Women's Teams Only Guarantees.	Not Allocated by Gender Guarantees.
Baseball	33000		
Basketball		3000	
Football			
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming		500	
Tennis			
Track and Field, X-Country	1000	1000	
Volleyball			
Others			
Subtotal All Teams	34000	4500	
Revenue Not Related to Specific Teams			
Total Revenue	34000	4500	

4			Include amounts received directly from individuals, corporations, associations, foundations, clubs or other organizations that are designated, restricted or unrestricted by the donor for the operation of the athletics program. Report amounts paid in excess of a ticket's value. Contributions shall include cash, marketable securities and in-kind contributions. In-kind contributions may include dealer-provided

Contributions.	29641806	automobiles (market value of the use of a car), apparel and soft-drink products for use by staff and teams. Do not report pledges until funds are allocated. Report gifts and merchandise from corporate sponsorship agreements in Category 12 (Royalties, Licensing, Advertisement and Sponsorship).

Revenues by Source	Men's Teams Only Contributions.	Women's Teams Only Contributions.	Not Allocated by Gender Contributions.
Baseball	130812		
Basketball	627887	111517	
Football	14713076		
Golf	102853	24863	
Gymnastics		252853	
Rowing		14927	
Soccer		45145	
Softball		90373	
Swimming	49563	39813	
Tennis	27677	35864	
Track and Field, X-Country	37010	33810	
Volleyball		28505	
Others			
Subtotal All Teams	15688878	677670	
Revenue Not Related to Specific Teams			13275258
Total Revenue	15688878	677670	13275258

5 Compensation and Benefits Provided by a Third Party.	260242	Include all amounts provided by a third party and contractually guaranteed by the institution, but not included on the institution?s W-2 (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, compensation from camps, radio income, television income, and shoe and apparel income). This should equal Expense Categories 20 and 22 combined.

Revenues by Source	Men's Teams Only Compensation and Benefits Provided by a Third Party.	Women's Teams Only Compensation and Benefits Provided by a Third Party.	Not Allocated by Gender Compensation and Benefits Provided by a Third Party.
Baseball	30843		
Basketball	8890	225	
Football	43665		
Golf	17130	7630	
Gymnastics		21725	
Rowing		1200	
Soccer		7930	
Softball		35750	
Swimming	7500		
Tennis	17500		
Track and Field, X-Country		800	
Volleyball		16900	
Others			
Subtotal All Teams	125528	92160	
Revenue Not Related to Specific Teams			42554
Total Revenue	125528	92160	42554

6 Direct State or Other Government Support.	0	Include state, municipal, federal and other government appropriations made in support of the operations of intercollegiate athletics. This amount includes funding specifically earmarked to the athletics department by government agencies for which the institution has no discretion to reallocate. Any state or other government support appropriated to the university, for which the university determines the dollar allocation to the athletics department shall be reported in Direct Institutional Support (item 7).

Revenues by Source	Men's Teams Only Direct State or Other Government Support.	Women's Teams Only Direct State or Other Government Support.	Not Allocated by Gender Direct State or Other Government Support.
Baseball			
Basketball			
Football			
Golf			
Gymnastics			

Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams			
Revenue Not Related to Specific Teams			
Total Revenue			

7	Direct Institutional Support.	5050985	Include value of institutional resources for the current operations of intercollegiate athletics, as well as all unrestricted funds allocated to the athletics department by the university (e.g., state funds, tuition, tuition waivers and transfers). Also include Federal Work Study support for student workers employed by athletics.

Revenues by Source	Men's Teams Only Direct Institutional Support.	Women's Teams Only Direct Institutional Support.	Not Allocated by Gender Direct Institutional Support.
Baseball			
Basketball			
Football			
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams			
Revenue Not Related to Specific Teams			5050985
Total Revenue			5050985

8	Indirect Facilities and Administrative Support.	0	Include value of facilities and services provided by the institution not charged to athletics. This support may include an allocation for institutional administrative cost, facilities and maintenance, grounds and field maintenance, security, risk management, utilities, depreciation and debt service. If your institution does not currently track indirect institutional support, consult your business office for a reasonable allocation. If counted here, include offsetting expenditure equal in value in Expense Category 32 (Indirect Facilities and Administrative Support).

Revenues by Source	Men's Teams Only Indirect Facilities and Administrative Support.	Women's Teams Only Indirect Facilities and Administrative Support.	Not Allocated by Gender Indirect Facilities and Administrative Support.
Baseball			
Basketball			
Football			
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams			

Revenue Not Related to Specific Teams			
Total Revenue			

9	NCAA/Conference Distributions including all tournament revenues.	15149392	Include revenue received from participation in bowl games, tournaments and all NCAA distributions. This category includes amounts received for direct participation or through a sharing arrangement with an athletics conference, including shares of conference television agreements. If known by sport, report as such. Include any payments received from the NCAA for hosting a championship (permissible to include in Revenue Not Related to Specific Teams).

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Revenues by Source	NCAA/Conference Distributions including all tournament revenues.	NCAA/Conference Distributions including all tournament revenues.	NCAA/Conference Distributions including all tournament revenues.
Baseball	11790		
Basketball	3550609	1346	
Football	11362284		
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams	14924683	1346	
Revenue Not Related to Specific Teams			223363
Total Revenue	14924683	1346	223363

10	Broadcast, Television, Radio, and Internet Rights.	7338001	Include institutional revenue received directly for radio and television broadcasts, Internet and e-commerce rights received through institution-negotiated contracts.

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Revenues by Source	Broadcast, Television, Radio, and Internet Rights.	Broadcast, Television, Radio, and Internet Rights.	Broadcast, Television, Radio, and Internet Rights.
Baseball			
Basketball	2205669		
Football	5132332		
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams	7338001		
Revenue Not Related to Specific Teams			
Total Revenue	7338001		

11	Program Sales, Concessions, Novelty Sales, and Parking.	72950	Include revenue of game programs, novelties, food or other concessions, and parking revenues. Revenue from sales of game program advertising is to be included in Revenue Category 12 (Royalties, Licensing, Advertisements and Sponsorships).

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Revenues by Source	Program Sales, Concessions, Novelty Sales,	Program Sales, Concessions, Novelty Sales,	Program Sales, Concessions, Novelty Sales,

	and Parking.	and Parking.	and Parking.
Baseball	670		
Basketball	2605	220	
Football	68747		
Golf	50	540	
Gymnastics			
Rowing			
Soccer		20	
Softball		78	
Swimming	10		
Tennis			
Track and Field, X-Country			
Volleyball		10	
Others			
Subtotal All Teams	72082	868	
Revenue Not Related to Specific Teams			
Total Revenue	72082	868	

12	Royalties, Licensing, Advertisements and Sponsorships.	3652637	Include all revenue from corporate sponsorships, licensing, sales of advertisements, trademarks and royalties. An allocation will be necessary to distinguish revenues generated by athletics versus the university if payments are combined. Include the value of in-kind products and services provided as part of the sponsorship (e.g., equipment, apparel, soft drinks, water and isotonic products).

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Revenues by Source	Royalties, Licensing, Advertisements and Sponsorships.	Royalties, Licensing, Advertisements and Sponsorships.	Royalties, Licensing, Advertisements and Sponsorships.
Baseball			
Basketball	165000		
Football	385000		
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams	550000		
Revenue Not Related to Specific Teams			3102637
Total Revenue	550000		3102637

13	Sports Camp Revenues.	1098798	Include amounts received by the athletics department for sports-camps and clinics.

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Revenues by Source	Sports Camp Revenues.	Sports Camp Revenues.	Sports Camp Revenues.
Baseball			
Basketball		140434	
Football			
Golf		31124	
Gymnastics			
Rowing		925	
Soccer			
Softball			
Swimming			
Tennis			

Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams		172483	
Revenue Not Related to Specific Teams			926315
Total Revenue		172483	926315

14	Endowment and Investment Income.	724550	Include endowment spending policy distribution and other investment income in support of the athletics department. These categories include only restricted investment and endowment income for the operations of intercollegiate athletics; institutional allocations of income from unrestricted endowments qualify as "Direct Institutional Support".

Revenues by Source	Men's Teams Only Endowment and Investment Income.	Women's Teams Only Endowment and Investment Income.	Not Allocated by Gender Endowment and Investment Income.
Baseball	1231		
Basketball	3347	264	
Football	24286		
Golf	11192	3239	
Gymnastics		2348	
Rowing			
Soccer			
Softball			
Swimming	9829		
Tennis		3372	
Track and Field, X-Country	7795		
Volleyball			
Others			
Subtotal All Teams	57680	9223	
Revenue Not Related to Specific Teams			657647
Total Revenue	57680	9223	657647

15	Other.	8662698	As a guide, please limit this to no more than 5% of total revenues and attempt to reclassify amounts greater than 5% to the appropriate category(ies) above to bring the category to less than 5% of the total revenue. If the number is greater than 5%, please provide the top three categories and amounts in the comments section below.

Revenues by Source	Men's Teams Only Other.	Women's Teams Only Other.	Not Allocated by Gender Other.
Baseball	32529		
Basketball	452285	10000	
Football	5550692		
Golf	44066	5079	
Gymnastics		45925	
Rowing			
Soccer			
Softball		65971	
Swimming	5227	3920	
Tennis	13285	8508	
Track and Field, X-Country	14083	17531	
Volleyball			
Others			
Subtotal All Teams	6112167	156934	
Revenue Not Related to Specific Teams			2393597
Total Revenue	6112167	156934	2393597

16	Subtotal Operating Revenue.	100302512	Add Columns 1-15.

Revenues by Source	Men's Teams Only Subtotal Operating Revenue.	Women's Teams Only Subtotal Operating Revenue.	Not Allocated by Gender Subtotal Operating Revenue.
Baseball	457569		

Basketball	8052130	287899	
Football	64249624		
Golf	175291	72475	
Gymnastics		569148	
Rowing		17052	
Soccer		53095	
Softball		306881	
Swimming	72129	44233	
Tennis	59470	47744	
Track and Field, X-Country	59888	53141	
Volleyball		52387	
Others			
Subtotal All Teams	73126101	1504055	
Revenue Not Related to Specific Teams			25872356
Total Revenue	73126101	1504055	25672356

17	Athletic Student Aid.	9954368	Include the total amount of athletically related student aid awarded, including summer school and tuition discounts and waivers (including aid given to student-athletes who have exhausted their eligibility or who are inactive due to medical reasons). Athletics aid awarded to non-athletes (student-managers, graduate assistants, trainers) should be reported as Expenses Not Related to Specific Teams. **It is permissible to report only dollars in the Expenses Not Related to Specific Teams row as long as you have reported non-zero entries for Equivalencies, Number of Students, and Dollars (all 3 required) for at least one sport.**

	Male Athletes			Female Athletes			Not Allocated by Gender		
	Scholarships			Scholarships			Scholarships		
Sport	Equivalencies Awarded in 2008-2009	Number of Students Receiving Athletic Aid	Total Dollar Amount	Equivalencies Awarded in 2008-2009	Number of Students Receiving Athletic Aid	Total Dollar Amount	Equivalencies Awarded in 2008-2009	Number of Students Receiving Athletic Aid	Total Dollar Amount
Baseball	[redacted]								
Basketball									
Football									
Golf									
Gymnastics									
Rowing									
Soccer									
Softball									
Swimming									
Tennis									
Track and Field, X-Country									
Volleyball									
Others									
Expenses Not Related to Specific Teams									1139083
Totals	[redacted]	[redacted]	4858284	[redacted]	[redacted]	3957001			1139083

18	Guarantees.	2555250	Include amounts paid to visiting participating institutions.

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender
Expenses by Object of Expenditure	Guarantees.	Guarantees.	Guarantees.
Baseball	23000		
Basketball	467000	63250	
Football	2000000		
Golf			
Gymnastics		2000	
Rowing			
Soccer			
Softball			
Swimming			

Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams	2490000	65250	
Expenses Not Related to Specific Teams			
Total Expenses	2490000	65250	

19	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	15196331	Include gross salaries, bonuses and benefits provided to head and assistant coaches, which includes all gross wages, benefits and bonuses attributable to coaching that would be reportable on university and related entities (e.g., foundations, booster clubs) W-2 and 1099 forms (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, supplemental retirement allowance, compensation from camps, radio income, television income, tuition remission, earned deferred compensation benefits). Place any payment made to previous coaches to satisfy a contractual agreement for coaching in Category 23 (Severance Payments).
20	Coaching Other Compensation and Benefits Paid by a Third Party.	192298	Include all compensation paid to the coaching staff by a third party and contractually guaranteed by the institution, but not included on the institution?s W-2 (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, compensation from camps, radio income, television income, shoe and apparel income). Expense Categories 20 and 22 combined should equal Revenue Category 5 (Compensation and Benefits Provided by a Third Party).

	Men's Teams Head Coaches				Men's Teams Assistant Coaches			
Sport	Number of Positions	FTE	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	Coaching Other Compensation and Benefits Paid by a Third Party.	Number of Positions	FTE	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	Coaching Other Compensation and Benefits Paid by a Third Party.
Baseball	1	1	435347	5296	2	2	389050	25547
Basketball	1	1	1306054	130	3	3	563020	8760
Football	1	1	4235292	235	9	9	3634051	18040
Golf	1	1	218967	17130	1	1	58462	0
Swimming	1	.5	48851	5000	4	2	97316	2500
Tennis	1	1	163073	17500	1	1	52698	
Track and Field, X-Country	1	1	172643		2	2	180214	
Others								
Subtotal All Teams	7	6.5	6580227	45291	22	20	4974811	54847
Expenses Not Related to Specific Teams								
Total Expenses			6580227	45291			4974811	54847

	Women's Teams Head Coaches				Women's Teams Assistant Coaches			
Sport	Number of Positions	FTE	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	Coaching Other Compensation and Benefits Paid by a Third Party.	Number of Positions	FTE	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	Coaching Other Compensation and Benefits Paid by a Third Party.
Basketball	1	1	386874	225	3	3	390107	
Golf	1	1	164080	7630	1	1	50126	
Gymnastics	1	1	481498	9225	2	2	344062	12500
Rowing	1	1	77532		2	2	96159	1200
Soccer	1	1	163389	130	2	2	109198	7800
Softball	1	1	220645	6750	2	2	207223	29000
Swimming	1	.5	48851		4	2	97317	
Tennis	1	1	162290		1	1	34886	
Track and Field, X-Country	1	1	164931	500	2	2	166023	300
Volleyball	1	1	146375	10500	2	2	129927	6400
Others								
Subtotal All Teams	10	9.5	2016265	34960	21	19	1625028	57200
Expenses Not Related to Specific Teams								
Total Expenses			2016265	34960			1625028	57200

21	Support Staff/Administrative Salaries, Benefits and Bonuses Paid by the University and Related Entities.	16034594	Include gross salaries, bonuses and benefits paid to administrative staff (i.e., football secretary, sport-specific trainer) that would be reportable on university and related entities (e.g., foundations, booster clubs) W-2 and 1099 forms (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, supplemental retirement allowance, compensation from camps, radio income, television income, tuition remission, earned deferred compensation benefits). Staff members responsible for the gender-specific athletics department, but not a specific sport (i.e., director of men?s athletics), will have their compensation figures reported as Expenses Not Related to Specific Teams fields. Athletics department staff members who assist both men?s and women?s teams (sports information director, academic advisor) will be reported as Not Allocated by Gender column.
22	Support Staff/Administrative Other Compensation and Benefits Paid by a Third Party.	67944	Include all compensation paid to the support staff by a third party and contractually guaranteed by the institution, but not included on the institution?s W-2 (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, compensation from camps, radio income, television income, shoe and apparel income). Expense Categories 20 and 22 combined should equal Revenue Category 5 (Compensation and Benefits Provided by a Third Party).

	Men's Teams Only		Women's Teams Only		Not Allocated by Gender	
Expenses by Object of Expenditure	Support Staff/Administrative Salaries, Benefits and Bonuses Paid by the University and Related Entities.	Support Staff/Administrative Other Compensation and Benefits Paid by a Third Party.	Support Staff/Administrative Salaries, Benefits and Bonuses Paid by the University and Related Entities.	Support Staff/Administrative Other Compensation and Benefits Paid by a Third Party.	Support Staff/Administrative Salaries, Benefits and Bonuses Paid by the University and Related Entities.	Support Staff/Administrative Other Compensation and Benefits Paid by a Third Party.
Baseball	113178					
Basketball	274193		144856			
Football	1909087	25390				
Golf	3288		3288			
Gymnastics			176125			
Rowing			14607			
Soccer			27374			
Softball			27252			
Swimming	132230		131813			
Tennis	3227		3940			
Track and Field, X-Country	8583		8304			
Volleyball			5773			
Others						
Subtotal All Teams	2443786	25390	543332			
Expenses Not Related to Specific Teams					13047476	42554
Total Expenses	2443786	25390	543332		13047476	42554

23	Severance Payments.	1232224	Include severance payments and applicable benefits recognized for past coaching and administrative personnel.

Expenses by Object of Expenditure	Men's Teams Only Severance Payments.	Women's Teams Only Severance Payments.	Not Allocated by Gender Severance Payments.
Baseball			
Basketball	361440	163417	
Football	648993		
Golf			
Gymnastics		11450	
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball		4615	
Others			
Subtotal All Teams	1010433	179482	
Expenses Not Related to Specific Teams			42309

Total Expenses	1010433	179482	42309

24 Recruiting.	1520826	Include transportation, lodging and meals for prospective student-athletes and institutional personnel on official and unofficial visits, telephone call charges, postage and such. Include value of use of institution?s own vehicles or airplanes as well as in-kind value of loaned or contributed transportation.	

Expenses by Object of Expenditure	Men's Teams Only Recruiting.	Women's Teams Only Recruiting.	Not Allocated by Gender Recruiting.
Baseball	61212		
Basketball	196516	104510	
Football	750045		
Golf	18477	17418	
Gymnastics		47045	
Rowing		40516	
Soccer		57429	
Softball		25530	
Swimming	20694	21683	
Tennis	33076	15794	
Track and Field, X-Country	25036	29125	
Volleyball		56720	
Others			
Subtotal All Teams	1105056	415770	
Expenses Not Related to Specific Teams			
Total Expenses	1105056	415770	

25 Team Travel	5531324	Include air and ground travel, lodging, meals and incidentals for competition related to preseason, regular season and postseason. Amounts incurred for food and lodging for housing the team before a home game also should be included. Include value of use of the institution?s own vehicles or airplanes as well as in-kind value of donor-provided transportation.	

Expenses by Object of Expenditure	Men's Teams Only Team Travel	Women's Teams Only Team Travel	Not Allocated by Gender Team Travel
Baseball	347942		
Basketball	422283	339411	
Football	2614890		
Golf	81549	79702	
Gymnastics		124525	
Rowing		169572	
Soccer		109031	
Softball		159103	
Swimming	126875	132860	
Tennis	115838	61504	
Track and Field, X-Country	276454	218518	
Volleyball		151267	
Others			
Subtotal All Teams	3985831	1545493	
Expenses Not Related to Specific Teams			
Total Expenses	3985831	1545493	

26 Equipment, Uniforms and Supplies.	1343915	Include items that are provided to the teams only. Equipment amounts are those expended from current or operating funds.	

Expenses by Object of Expenditure	Men's Teams Only Equipment, Uniforms and Supplies.	Women's Teams Only Equipment, Uniforms and Supplies.	Not Allocated by Gender Equipment, Uniforms and Supplies.
Baseball	102424		
Basketball	58884	3420	
Football	591237		
Golf	2496	8131	
Gymnastics		52853	
Rowing		49564	

Soccer		55333	
Softball		41903	
Swimming	25472	26065	
Tennis	14351	13865	
Track and Field, X-Country	52526	77021	
Volleyball		15462	
Others			
Subtotal All Teams	847390	343617	
Expenses Not Related to Specific Teams			152908
Total Expenses	847390	343617	152908

27	Game Expenses.	2210908	Include game-day expenses other than travel that are necessary for intercollegiate athletics competition, including officials, security, event staff, ambulance and such.

Expenses by Object of Expenditure	Men's Teams Only Game Expenses.	Women's Teams Only Game Expenses.	Not Allocated by Gender Game Expenses.
Baseball	89190		
Basketball	207966	151786	
Football	1311194		
Golf	270		
Gymnastics		73920	
Rowing		2913	
Soccer		28689	
Softball		86461	
Swimming	751	1081	
Tennis	23117	22169	
Track and Field, X-Country	10353	9819	
Volleyball		31230	
Others			
Subtotal All Teams	1642841	408068	
Expenses Not Related to Specific Teams			159999
Total Expenses	1642841	408068	159999

28	Fund Raising, Marketing and Promotion.	4989579	Include costs associated with fund raising, marketing and promotion for media guides, brochures, recruiting publications and such.

Expenses by Object of Expenditure	Men's Teams Only Fund Raising, Marketing and Promotion.	Women's Teams Only Fund Raising, Marketing and Promotion.	Not Allocated by Gender Fund Raising, Marketing and Promotion.
Baseball	13913		
Basketball	199913	81261	
Football	2049742		
Golf	5333	2488	
Gymnastics		78980	
Rowing		1157	
Soccer		4096	
Softball		28619	
Swimming	1733	2257	
Tennis	3636	3862	
Track and Field, X-Country	2101	1510	
Volleyball		6721	
Others			
Subtotal All Teams	2276371	210951	
Expenses Not Related to Specific Teams			2502257
Total Expenses	2276371	210951	2502257

29	Sports Camp		Include all expenses paid by the athletics department, including non-athletics personnel salaries and benefits, from hosting sports camps

Expenses.	1623603	and clinics. Athletics personnel salaries and benefits should be reported in Categories 19, 20, 21 or 22.

Expenses by Object of Expenditure	Men's Teams Only Sports Camp Expenses.	Women's Teams Only Sports Camp Expenses.	Not Allocated by Gender Sports Camp Expenses.
Baseball			
Basketball		53556	
Football			
Golf	36751		
Gymnastics			
Rowing		700	
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams	36751	54256	
Expenses Not Related to Specific Teams			1532596
Total Expenses	36751	54256	1532596

30	Direct Facilities, Maintenance, and Rental.	16787445	Include direct facilities costs charged to intercollegiate athletics, including building and grounds maintenance, utilities, rental fees, operating leases, equipment repair and maintenance, and debt service.

Expenses by Object of Expenditure	Men's Teams Only Direct Facilities, Maintenance, and Rental.	Women's Teams Only Direct Facilities, Maintenance, and Rental.	Not Allocated by Gender Direct Facilities, Maintenance, and Rental.
Baseball	112117		
Basketball	287695	79672	
Football	1642282		
Golf	44142	43448	
Gymnastics		136016	
Rowing		44262	
Soccer		18494	
Softball		50933	
Swimming	1761	1298	
Tennis	4712	4759	
Track and Field, X-Country	5327	26202	
Volleyball		26330	
Others			
Subtotal All Teams	2098036	431414	
Expenses Not Related to Specific Teams			14257995
Total Expenses	2098036	431414	14257995

31	Spirit Groups	633656	Include support for spirit groups including bands, cheerleaders, mascots, dancers, etc.

Expenses by Object of Expenditure	Men's Teams Only Spirit Groups	Women's Teams Only Spirit Groups	Not Allocated by Gender Spirit Groups
Baseball			
Basketball	162795	66913	
Football	227375		
Golf			
Gymnastics		58857	
Rowing			
Soccer			
Softball		58858	
Swimming			

Tennis			
Track and Field, X-Country			
Volleyball		58858	
Others			
Subtotal All Teams	390170	243486	
Expenses Not Related to Specific Teams			
Total Expenses	390170	243486	

32	Indirect Facilities and Administrative Support.	0	Include value of facilities and services provided by the institution not charged to athletics. This support may include an allocation for institutional administrative cost, facilities and maintenance, grounds and field maintenance, security, risk management, utilities, depreciation and debt service. If your institution does not currently track indirect institutional support, consult your business office for a reasonable allocation. If counted here, include offsetting amount equal in value in Revenue in Category 8 (Indirect Facilities and Administrative Support).

Expenses by Object of Expenditure	Men's Teams Only Indirect Facilities and Administrative Support.	Women's Teams Only Indirect Facilities and Administrative Support.	Not Allocated by Gender Indirect Facilities and Administrative Support.
Baseball			
Basketball			
Football			
Golf			
Gymnastics			
Rowing			
Soccer			
Softball			
Swimming			
Tennis			
Track and Field, X-Country			
Volleyball			
Others			
Subtotal All Teams			
Expenses Not Related to Specific Teams			
Total Expenses			

33	Medical Expenses and Medical Insurance	1582831	Include medical expenses and medical insurance premiums for student-athletes.

Expenses by Object of Expenditure	Men's Teams Only Medical Expenses and Medical Insurance	Women's Teams Only Medical Expenses and Medical Insurance	Not Allocated by Gender Medical Expenses and Medical Insurance
Baseball	28528		
Basketball	17358	30217	
Football	627617		
Golf	3154	17366	
Gymnastics		34749	
Rowing		26802	
Soccer		43869	
Softball		58060	
Swimming	9245	68225	
Tennis	11976	18439	
Track and Field, X-Country	23320	45982	
Volleyball		17010	
Others			
Subtotal All Teams	721198	360719	
Expenses Not Related to Specific Teams			500914
Total Expenses	721198	360719	500914

34	Memberships and Dues.	140205	Include memberships, conference and association dues.

Expenses by Object of Expenditure	Men's Teams Only Memberships and Dues.	Women's Teams Only Memberships and Dues.	Not Allocated by Gender Memberships and Dues.
Baseball			
Basketball	400	543	
Football	1160		
Golf	688	879	
Gymnastics		1572	
Rowing		1455	
Soccer		240	
Softball		370	
Swimming	576	576	
Tennis	630	760	
Track and Field, X-Country	650	420	
Volleyball		1145	
Others			
Subtotal All Teams	4104	7960	
Expenses Not Related to Specific Teams			128141
Total Expenses	4104	7960	128141

35	Other Operating Expenses.	9271670	Other operating expenses include printing and duplicating, subscriptions, business insurance, telephone, postage, operating and equipment leases, non-team travel and any other operating expense not reported elsewhere. Do not include indirect administration overhead provided by the university (use Category 32) or salaries and benefits (use Categories 19 or 21). Attempt to allocate all expenses to Categories 17 through 34 before using this category. As a guide, please limit this category to 10% of total operating expenses. If the number is greater than 10%, please provide the top three categories and amounts in the comments section below.

Expenses by Object of Expenditure	Men's Teams Only Other Operating Expenses.	Women's Teams Only Other Operating Expenses.	Not Allocated by Gender Other Operating Expenses.
Baseball	53317		
Basketball	473590	118009	
Football	2694969		
Golf	40899	24356	
Gymnastics		172808	
Rowing		68570	
Soccer		31681	
Softball		53964	
Swimming	25474	22782	
Tennis	18476	27752	
Track and Field, X-Country	54272	36896	
Volleyball		78535	
Others			
Subtotal All Teams	3360997	635353	
Expenses Not Related to Specific Teams			5275320
Total Expenses	3360997	635353	5275320

36	Total Operating Expenses.	90868971	Add Columns 17-35.

Expenses by Object of Expenditure	Men's Teams Only Total Operating Expenses.	Women's Teams Only Total Operating Expenses.	Not Allocated by Gender Total Operating Expenses.
Baseball	2119208		
Basketball	5358319	2678605	
Football	28053214		
Golf	670295	606889	
Gymnastics		2317354	
Rowing		800152	
Soccer		1112863	
Softball		1449480	
Swimming	818273	1025518	
Tennis			

	682086	613439	
Track and Field, X-Country	1250419	1333010	
Volleyball		1198295	
Others			
Subtotal All Teams	38951814	13135605	
Expenses Not Related to Specific Teams	0	0	38781552
Total Expenses	38951814	13135605	38781552

50	Table 1	734	Table 1 - - - Athletics Participation. A participant is a student-athlete who, as of the day of a varsity team's first scheduled contest: (a) is listed as a team member; (b) practices with the varsity team and receives coaching from one or more varsity coaches; or (c) receives athletically-related student aid. Any student who satisfies one or more of the criteria above is a participant, including a student on a team the institution designates or defines as junior varsity, freshman, or novice, or a student who does not play in a scheduled contest, whether for medical reasons or to preserve eligibility (i.e., a redshirt). Student-athletes who participate in more than one sport should be counted in each sport. The Coed Teams column is marked based on the content of the sports sponsored table (Mixed Sports) in the School Info page. **Male practice players are NOT to be included on the NCAA form as participants in this table, but are now required by the federal EADA.**

Sport	Coed Teams	Number of Participants		Number of Participants Participating on a Second Team		Number of Participants Participating on a Third Team	
		Men's Teams	Women's Teams	Men's Teams	Women's Teams	Men's Teams	Women's Teams
Baseball		42					
Basketball		12	16				
Cross Country		19	14	19	14	19	14
Football		158					
Golf		12	9				
Gymnastics			22				
Rowing			96				
Soccer			29				
Softball			20				
Swimming		30	37				
Tennis		16	9				
Track, Indoor		47	42	28	28	19	14
Track, Outdoor		47	42	28	28	19	14
Volleyball			15				
Others							
Total Participants		383	351	75	70	57	42
Per Participants		52.2%	47.8%				
Unduplicated Count of Participants		336.0	309.0				

51	Table 2A	7	Table 2A - - - Head Coaches Assignments Men's Teams

Sport	Head Coaches of Men's Teams							
	Male Coaches - Head Count				Female Coaches - Head Count			
	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer
Baseball	1		1					
Basketball	1		1					
Football	1		1					
Golf	1		1					
Swimming		1	1					
Tennis	1		1					
Track and Field, X-Country	1		1					
Others								
Coaching Position Totals	6	1	7					

52	Table 2B	10	Table 2B - - - Head Coaches Assignments Women's Teams

	Head Coaches of Women's Teams							
	Male Coaches - Head Count				Female Coaches - Head Count			
Sport	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer
Basketball	1		1					
Golf	1		1					
Gymnastics					1		1	
Rowing	1		1					
Soccer	1		1					
Softball	1		1					
Swimming		1	1					
Tennis					1		1	
Track and Field, X-Country					1		1	
Volleyball					1		1	
Others								
Coaching Position Totals	5	1	6		4		4	

53	Table 3A	22	Table 3A - - - Assistant Coaches Assignments Men's Teams

	Assistant Coaches of Men's Teams							
	Male Coaches - Head Count				Female Coaches - Head Count			
Sport	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer
Baseball	2		2					
Basketball	3		3					
Football	9		9					
Golf	1		1					
Swimming		3	3			1	1	
Tennis	1		1					
Track and Field, X-Country	2		2					
Others								
Coaching Position Totals	18	3	21			1	1	

54	Table 3B	21	Table 3B - - - Assistant Coaches Assignments Women's Teams

	Assistant Coaches of Women's Teams							
	Male Coaches - Head Count				Female Coaches - Head Count			
Sport	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer	Full Time Coaching Duties	Part Time Coaching Duties	Full Time University Employee	Part Time University Employee or Volunteer
Basketball	1		1		2		2	
Golf					1		1	
Gymnastics	1		1		1		1	
Rowing	1		1		1		1	
Soccer	1		1		1		1	
Softball					2		2	
Swimming		3	3		1		1	
Tennis	1		1					
Track and Field, X-Country	2		2					
Volleyball	1		1		1		1	
Others								
Coaching Position Totals	8	3	11		10		10	

56	Table 4 - Operating Expenses	8773240	All expenses an institution incurs attributable to home, away, and neutral-site intercollegiate athletic contests (commonly known as "game-day expenses"), for (A) Lodging, meals, transportation, uniforms, and equipment for coaches, team members, support staff (including, but not limited to team managers and trainers), and others; and (B) Officials. This is calculated from data entered earlier in the system.

	Operating Expenses		Per Capita Expenses	
Sport	Men's Teams	Women's Teams	Men's Teams	Women's Teams
Baseball	539556		12847	
Basketball	689133	494617	57428	30914
Football	4517321		28591	
Golf	84315	87833	7026	9759
Gymnastics		251298		11423
Rowing		222049		2313
Soccer		193053		6657
Softball		287467		14373
Swimming	153098	160006	5103	4324
Tennis	153306	97538	9582	10838
Track and Field, X-Country	339333	305358	3003	3116
Volleyball		197959		13197
Others				
Total Operating Expense	6476062	2297178	16909	6545
Percent of Total	73.8%	26.2%		

Comments

55	Comments	Please include any comments.
null		

Capital Expenditure Survey

1. Does your institution utilize an athletic facility that is not under the direct control of the university (e.g. municipal facility, professional facility)?
   Yes. Go to question 2. No. Go to question 3.
2. If the facility(s) is not under the control of the university, check one or more of the following boxes:
   Football Stadium?
   Basketball Facility?
   Other
3. Current year additions: Additions to facilities during the current reporting period.
   a. Football Athletics Facilities 9410276
   b. Basketball Athletics Facilities 22820
   c. Other Athletics Facilities 220840
   d. Total Athletics Facilities (a+b+c) 9653936
   e. Other Institutional Facilities 181263053
4. Current year deletions: Deletions of facilities during the current reporting period.
   a. Football Athletics Facilities 0
   b. Basketball Athletics Facilities 0
   c. Other Athletics Facilities 0
   d. Total Athletics Facilities (a+b+c) 0
   e. Other Institutional Facilities 0
5. Total book value of athletically-related and university plant and equipment net of depreciation.
   Athletically-Related Property Plant and Equipment balance. 188398739
   Institution's Total Property Plant and Equipment balance.* 896511317
6. Total annual debt service on athletic and university facilities.
   Athletically-Related Facilities Annual Debt Service 8266162
   Institution's Annual Debt Service* 22894515
7. Total debt outstanding on athletic and university facilities.
   Athletically-Related Outstanding Debt Balance 126188902
   Institution's Total Outstanding Debt Balance* 366624172

Surplus/Deficit Allocation and Additional Athletics Financial Information

1. Total Athletics Revenues/Expenses (fields a. - c. are pre-populated based upon data already captured in Rev/Exp category reporting)
   a. Total Athletics Revenues 100302512
   b. Total Athletics Expenses 90868971
   c. Surplus(Deficit) 9433541
   How is the deficit funded or surplus allocated? (Enter amount where applicable)

d. Athletic Reserve (enter negative "-" if deficit indicated in 1.c above)	9433541
e. Auxillary Reserve (enter negative "-" if deficit indicated in 1.c above)	
f. Institutional Reserve (enter negative "-" if deficit indicated in 1.c above)	
g. Other (enter negative "-" if deficit indicated in 1.c above)	
Comment	

Questions 2 – 7 apply only to DI schools. For FY2009 reporting, this is voluntary. Beginning with FY2010 reporting, this will be required as stipulated by the referenced by-laws:

2. 3.2.4.16 (d) Value of endowments at fiscal year-end that are dedicated to the sole support of athletics:

3. 3.2.4.16 (e) If applicable, value of all pledges at fiscal year-end that solely support athletics:

4. 3.2.4.16 (f) The athletics department fiscal year-end unrestricted fund balance:

Additional Financial Information (voluntary submission if applicable)

5. Direct support athletics provides back to the university/academics:
Purpose of the direct support:

6. Indirect support athletics provides back to the university/academics):

Parking	
Concessions	
Licensing/Royalties	
Tuition	
Pouring rights	
Other *Please specify (Max. 50 Chars.)	
Total (calculated from entries above)	

Indirect Facilities and Administrative Support
* the following questions pertain to the Financial Reporting System's category #32 – Indirect Facilities and Administrative Support.

7a. What indirect cost allocation methodology was used in determining your indirect facilities and administrative support?

Federal Indirect Cost Methodology
Square footage/space
Headcount
Salaries
Percent of budget
Other *Please specify (Max. 50 Chars.)

7b. Other than the Agreed Upon Procedures Report, for what other purposes has the indirect cost methodology been used?

Revenues by Sport

70	Table 7 -- Revenues.	100042270	You must also include revenues attributable to intercollegiate athletic activities. This means revenues from appearance guarantees and options, an athletic conference, tournament or bowl games, concessions, contributions from alumni and others, institutional support, program advertising and sales, radio and television, royalties, signage and other sponsorships, sports camps, State or other government support, student activity fees, ticket and luxury box sales, and any other revenues attributable to intercollegiate athletic activities. This is calculated from data entered earlier in the system.

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender	Total
Revenues Attributable to Specific Teams	Table 7 -- Revenues.	Table 7 -- Revenues.	Table 7 -- Revenues.	Table 7 -- Revenues.
Baseball	426726			426726
Basketball	8043240	287674		8330914
Football	64205959			64205959
Golf	158161	64845		223006
Gymnastics		547423		547423
Rowing		15852		15852
Soccer		45165		45165
Softball		271131		271131
Swimming	64629	44233		108862
Tennis	41970	47744		89714
Track and Field, X-Country	59888	52341		112229
Volleyball		35487		35487
Others				0
Total Revenue excluding football and basketball	751374	1124221		1875595
Total Revenue	73000573	1411895		74412468
Revenue Not Related to Specific Teams			25629802	25629802
Grand Total Revenue	73000573	1411895	25629802	100042270

Expenses by Sport

71	Table 8 -- Expenses.	90608729	Expenses attributable to intercollegiate athletic activities. These include appearance guarantees and options, athletically related student aid, contract services, equipment, fundraising activities, operating expenses i.e.(game-day expenses), promotional activities, recruiting expenses, salaries and benefits, supplies, travel, and any other expenses attributable to intercollegiate athletic activities. This is calculated from data entered earlier in the system.

	Men's Teams Only	Women's Teams Only	Not Allocated by Gender	Total
Expenses Attributable to Specific Teams	Table 8 -- Expenses.	Table 8 -- Expenses.	Table 8 -- Expenses.	Table 8 -- Expenses.
Baseball	2088365			2088365
Basketball	5349429	2678380		8027809
Football	28009549			28009549
Golf	653165	599259		1252424
Gymnastics		2295629		2295629
Rowing		798952		798952
Soccer		1104933		1104933
Softball		1413730		1413730
Swimming	810773	1025518		1836291
Tennis	664586	613439		1278025
Track and Field, X-Country	1250419	1332210		2582629
Volleyball		1181395		1181395
Others				0
Total Expenses excluding football and basketball	5467308	10365065		15832373
Total Expenses	38826286	13043445		51869731

Expenses Not Related to Specific Teams			38738998	38738998
Grand Total Expenses	38826286	13043445	38738998	90608729

Miscellaneous Information

17	Athletically Related Student Aid	Include the total amount of athletically related student aid awarded, including summer school and tuition discounts and waivers (including aid given to student-athletes who have exhausted their eligibility or who are inactive due to medical reasons). Athletics aid awarded to non-athletes (student-managers, graduate assistants, trainers) should be reported as Expenses Not Related to Specific Teams. **It is permissible to report only dollars in the Expenses Not Related to Specific Teams row as long as you have reported non-zero entries for Equivalencies, Number of Students, and Dollars (all 3 required) for at least one sport.**

Men's Teams	4858284
Women's Teams	3957001
Total Amount	8815285

24	Recruiting Expenditures	Include transportation, lodging and meals for prospective student-athletes and institutional personnel on official and unofficial visits, telephone call charges, postage and such. Include value of use of institution?s own vehicles or airplanes as well as in-kind value of loaned or contributed transportation.

Men's Teams	1105056
Women's Teams	415770
Total Recruiting Expenses	1520826

19	Head Coaches Salaries	Include gross salaries, bonuses and benefits provided to head and assistant coaches, which includes all gross wages, benefits and bonuses attributable to coaching that would be reportable on university and related entities (e.g., foundations, booster clubs) W-2 and 1099 forms (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, supplemental retirement allowance, compensation from camps, radio income, television income, tuition remission, earned deferred compensation benefits). Place any payment made to previous coaches to satisfy a contractual agreement for coaching in Category 23 (Severance Payments).

Average Salaries of Head Coaches	Dollars per FTE	FTE's	Dollars per Position	Number of Positions
Men's Teams	1012342.62	6.5	940032.43	7
Women's Teams	212238.42	9.5	201626.5	10

19	Assistant Coaches Salaries	Include gross salaries, bonuses and benefits provided to head and assistant coaches, which includes all gross wages, benefits and bonuses attributable to coaching that would be reportable on university and related entities (e.g., foundations, booster clubs) W-2 and 1099 forms (e.g., car stipend, country club membership, entertainment allowance, clothing allowance, speaking fees, housing allowance, supplemental retirement allowance, compensation from camps, radio income, television income, tuition remission, earned deferred compensation benefits). Place any payment made to previous coaches to satisfy a contractual agreement for coaching in Category 23 (Severance Payments).

Average Salaries of Assistant Coaches	Dollars per FTE	FTE's	Dollars per Position	Number of Positions
Men's Teams	248740.55	20.0	226127.77	22
Women's Teams	85527.79	19.0	77382.29	21

Statement of Revenues and Expenses
For the year ended June 30, 2009 (UNAUDITED)

ID	Item	Football	Men's Basketball	Women's Basketball	Other Sports	Non-Program Specific	Total
1	Ticket Sales.	26969542	1035838	20893	585680	0	28611953
2	Student Fees	0	0	0	0	0	0
3	Guarantees.	0	0	3000	35500	0	38500
4	Contributions.	14713076	627887	111517	914068	13275258	29641806
5	Compensation and Benefits Provided by a Third Party.	43665	8890	225	164908	42554	260242
6	Direct State or Other Government Support.	0	0	0	0	0	0
7	Direct Institutional Support.	0	0	0	0	5050985	5050985
8	Indirect Facilities and Administrative Support.	0	0	0	0	0	0
9	NCAA/Conference Distributions including all tournament revenues.	11362284	3550609	1346	11790	223363	15149392
10	Broadcast, Television, Radio, and Internet Rights.	5132332	2205669	0	0	0	7338001
11	Program Sales, Concessions, Novelty Sales, and Parking.	68747	2605	220	1378	0	72950
12	Royalties, Licensing, Advertisements and Sponsorships.	385000	165000	0	0	3102637	3652637
13	Sports Camp Revenues.	0	0	140434	32049	926315	1098798

14	Endowment and Investment Income.	24286	3347	264	39006	657647	724550
15	Other.	5550692	452285	10000	256124	2393597	8662698
16	Subtotal Operating Revenue.	64249624	8052130	287899	2040503	25672356	100302512
Expenses							
17	Athletic Student Aid.	3071615	350322	500778	4892570	1139083	9954368
18	Guarantees.	2000000	467000	63250	25000	0	2555250
19	Coaching Salaries, Benefits, and Bonuses Paid by the University and Related Entities.	7869343	1869074	776781	4681133	0	15196331
20	Coaching Other Compensation and Benefits Paid by a Third Party.	18275	8890	225	164908	0	192298
21	Support Staff/Administrative Salaries, Benefits and Bonuses Paid by the University and Related Entities.	1909087	274193	144856	658982	13047476	16034594
22	Support Staff/Administrative Other Compensation and Benefits Paid by a Third Party.	25390	0	0	0	42554	67944
23	Severance Payments.	648993	361440	163417	16065	42309	1232224
24	Recruiting.	750045	196516	104510	469755	0	1520826
25	Team Travel	2614890	422283	339411	2154740	0	5531324
26	Equipment, Uniforms and Supplies.	591237	58884	3420	537466	152908	1343915
27	Game Expenses.	1311194	207966	151786	379963	159999	2210908
28	Fund Raising, Marketing and Promotion.	2049742	199913	81261	156406	2502257	4989579
29	Sports Camp Expenses.	0	0	53556	37451	1532596	1623603
30	Direct Facilities, Maintenance, and Rental.	1642282	287695	79672	519801	14257995	16787445
31	Spirit Groups	227375	162795	66913	176573	0	633656
32	Indirect Facilities and Administrative Support.	0	0	0	0	0	0
33	Medical Expenses and Medical Insurance	627617	17358	30217	406725	500914	1582831
34	Memberships and Dues.	1160	400	543	9961	128141	140205
35	Other Operating Expenses.	2694969	473590	118009	709782	5275320	9271670
36	Total Operating Expenses.	28053214	5358319	2678605	15997281	38781552	90868971
	Excess (Deficiencies) of Revenues Over (Under) Expenses	**36196410**	**2693811**	**(-2390706)**	**(-13956778)**	**(-13109196)**	**9433541**

APPENDIX B

Table B1: Correlation of Instrumental Variables

VARIABLES	Basketball PPG*	Basketball SOS†	Football PPG*	Football SOS†
Basketball PPG*	1.0000			
Basketball SOS†	0.2064	1.0000		
Football PPG*	0.0473	0.1683	1.0000	
Football SOS†	0.2609	0.8068	0.1442	1.0000

* PPG = points per game.

† SOS = strength of schedule.

Table B2: First-stage Results, Basketball Wins Instrumented on SOS and PPG

VARIABLES	(1) Full Model Basketball Wins	(2) BCS-Only Basketball Wins	(3) Non-BCS Basketball Wins
Enrollment	1.89e-05	0.000142	-1.57e-05
	(0.000108)	(0.000162)	(0.000162)
Sport count	-0.0770	-0.194	-0.0578
	(0.120)	(0.291)	(0.132)
Institutional rev. (CPI-adj)	1.70e-10	7.36e-10	-4.06e-09
	(8.51e-10)	(1.00e-09)	(2.52e-09)
Ticket sales (CPI-adj.)	-7.64e-09	4.15e-08	1.77e-07
	(7.81e-08)	(1.01e-07)	(3.31e-07)
Basketbal PPG*	0.639***	0.684***	0.615***
	(0.0263)	(0.0533)	(0.0305)
Basketball SOS†	-0.0505	0.196	-0.0988
	(0.0716)	(0.157)	(0.0821)
Fixed Effects	YES	YES	YES
Year Effects	YES	YES	YES
Observations	1,490	370	1,117
Number of institutions	225	54	171
R-squared	0.333	0.369	0.327

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

* PPG = points per game.

† SOS = strength of schedule.

Note: The first-stage results in Table B2 correspond to Table 2.8.

Table B3: First-stage Results, Football Wins Instrumented on SOS and PPG

	(1) Full Model	(2) FBS	(3) FCS
VARIABLES	Football winning pct (*100)	Football wins	Football wins
Enrollment	-0.000399	-3.12e-05	-0.000219
	(0.000383)	(5.60e-05)	(0.000144)
Sport count	-0.272	0.0278	0.00218
	(0.446)	(0.0978)	(0.0779)
Institutional rev. (CPI-adj)	-3.17e-10	1.01e-10	1.30e-09
	(2.84e-09)	(3.87e-10)	(2.23e-09)
Ticket sales (CPI-adj.)	-1.30e-07	1.00e-08	9.04e-07**
	(2.63e-07)	(3.65e-08)	(4.02e-07)
Football PPG*	1.933***	0.263***	0.229***
	(0.0735)	(0.0127)	(0.0159)
Football SOS†	-0.245*	-0.0430	-0.00582
	(0.125)	(0.0281)	(0.0231)
Fixed Effects	YES	YES	YES
Year Effects	YES	YES	YES
Observations	1,177	677	499
Number of institutions	174	98	77
R-squared	0.423	0.452	0.362

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

* PPG = points per game.

† SOS = strength of schedule.

Note: The first-stage results in Table B3 correspond to Table 2.10.

Table B4: First-stage Results, Basketball and Football Wins Instrumented on SOS and PPG

VARIABLES	(1) Full Combined winning pct (*100)	(2) FBS Combined winning pct (*100)	(3) FCS Combined winning pct (*100)	(4) BCS-Only Combined winning pct (*100)	(5) Non-BCS Combined winning pct (*100)
Enrollment	-0.000161	-0.000141	-0.000231	0.000186	-0.000423
	(0.000252)	(0.000251)	(0.000766)	(0.000296)	(0.000453)
Sport count	-0.342	0.150	-0.569	-0.161	-0.394
	(0.292)	(0.439)	(0.414)	(0.532)	(0.354)
Institutional rev. (CPI-adj)	-6.41e-10	-2.05e-10	8.47e-10	1.13e-09	-9.87e-09
	(1.86e-09)	(1.73e-09)	(1.18e-08)	(1.83e-09)	(6.28e-09)
Ticket sales (CPI-adj.)	-1.97e-08	-3.95e-09	1.68e-06	1.22e-07	8.52e-07
	(1.72e-07)	(1.64e-07)	(2.14e-06)	(1.85e-07)	(8.02e-07)
Basketball PPG*	1.292***	1.377***	1.178***	1.279***	1.290***
	(0.0639)	(0.0782)	(0.107)	(0.0977)	(0.0829)
Basketball SOS†	-0.438**	-0.156	-0.775**	0.0773	-0.635***
	(0.176)	(0.205)	(0.320)	(0.288)	(0.227)
Football PPG*	0.586***	0.545***	0.649***	0.482***	0.644***
	(0.0481)	(0.0568)	(0.0846)	(0.0768)	(0.0623)
Football SOS†	-0.0764	-0.424***	0.0999	-0.414**	0.00246
	(0.0822)	(0.126)	(0.123)	(0.176)	(0.0980)
Fixed Effects	YES	YES	YES	YES	YES
Year Effects	YES	YES	YES	YES	YES
Observations	1177	677	499	370	804
Number of institutions	174	98	77	54	120
R-squared	0.363	0.433	0.313	0.412	0.358

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
* PPG = points per game.
† SOS = strength of schedule.
Note: The first-stage results in Table B4 correspond to Table 2.12.

APPENDIX C

Table C1: First-stage Results, Regression Discontinuity Analysis

VARIABLES	(1) Full Sample Probability	(2) Restricted Sample Probability
Assignment score (centered at cut score)	0.00706***	0.0111***
	(0.000226)	(0.000399)
Indicator for assignment greater than cut score	0.663***	0.627***
	(0.00471)	(0.00654)
Observations	3,515	1,985
Number of institutions	345	190
R-squared	0.929	0.935

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1